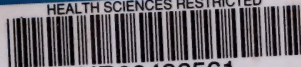


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CONTRIBUTIONS.

A New Retaining Appliance.

BY C. S. CASE, D.D.S., M.D., CHICAGO.

IF there is one thing more than another that has prevented the operation of regulating teeth from becoming established as a part of the regular practice of dentists in general, it is the discouraging difficulties and frequent failures that have attended the final retention of the teeth in their regulated positions.

The many ingenious appliances and methods that have been introduced have enabled almost every dentist, who has made the attempt, to greatly improve if not fully correct the positions of malposed teeth.

Up to this stage it has been one of the most satisfactory operations in dentistry, and yet one unfortunately that has so often been followed with failure, through the tendency of the teeth, under the forceful influences of inheritance or otherwise, to return to their former positions that many skillful dentists have abandoned the operation of regulating teeth altogether, while others will only attempt the simplest cases or those which can be brought to a position of self-retention.

I shall not attempt in this article to go into the causes which operate to produce this tendency of the teeth, nor give my opinion in detail of the imperfection and inadequacy of retaining implements that have been and are still being used. There are, however, a few underlying principles that should be borne in mind. First. Teeth that are moved by orthopedic processes from one relative position to another are for a considerable time—often for

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years—surrounded by physical forces that tend to pull or push them back to the irregular position they formerly occupied. Second. These forces continue to operate until the tissues are brought to equilibrium in their changed positions by the physiological processes of nature. Third. To most successfully aid nature in the upbuilding of sustaining elements and structures, the moved and loosened teeth should be held absolutely still during the entire period that is required for their permanent retention. The retaining appliance should be one that so firmly grasps the teeth that the aforesaid forces are not only completely held at bay, but the slight movements occasioned by mastication and otherwise are prevented. It should be one, moreover, that frequent removals for cleansings, etc., will be unnecessary and impossible.

It should therefore be as perfectly fitted, finished and cemented as a bridge denture, and so constructed that the teeth and gums can be kept in a healthy condition while it is worn with the same comfort and unconsciousness that a filling or crown produces.

To fulfill all these demands, its appearance in the mouth is of the utmost importance. Patients and friends of patients will submit to long, tedious and painful operations with cumbersome and unsightly apparatus, stimulated by the hope of ultimate success, but when the teeth are finally brought to a satisfactory position an all-round fight begins for the too early removal of every reminder of the unhappy ordeal through which they have passed. This often comes most forcibly through the influence of sympathizing friends and relatives, especially if the retaining appliance is at all unsightly or produces discomfort to the patient.

As these difficulties and demands apply particularly to the anterior teeth, an apparatus that has been used with the greatest satisfaction in my practice for the past two years and which has been developed during this time to its present stage of seeming perfection is shown in Fig. 1.

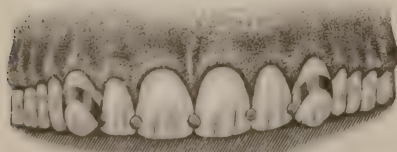


Fig. 1.

In brief, the six bands are soldered together and to a narrow plate that is swaged to fit their lingual surfaces, then the labial portions of the incisor bands are cut away so as to leave only small interior extensions be-

tween the teeth which when properly reinforced with solder and finished, answer every requirement and look much like approximal gold fillings.

The abutment bands, which in this instance entirely encircle the cuspids to give greater stability to the apparatus, are narrowed and perfectly contoured over the labial surfaces.

Unless the appliance is constructed with the most perfect mechanical skill in every detail, it will fall short of the desired object, and may easily result in a thing that cannot even be placed on the teeth in its final attachment; or one that, if attached, will not hold the teeth firmly, or may in itself force them to an irregular position. Long experience and repeated trials have taught me the importance of certain exact requirements in its construction, which, if followed, as I shall describe, will result in an appliance that will fulfill every demand.

When the teeth are regulated the change from the regulating apparatus to the retaining appliance should be made in the shortest time possible, because the several forces being suddenly removed, the teeth will proceed to go back—often to a marked degree in a few hours—therefore the retainer should be placed on the teeth the same day that the apparatus is removed. As it takes from four to six hours to accomplish this operation, even for an expert who has the proper implements and material ready at hand and with the most skilled assistants for the laboratory work, I usually make an early appointment for the beginning steps.

In removing a regulating apparatus attached to bands cemented to the teeth, it frequently becomes necessary to cut the bands with a pair of pliers made especially for the purpose, one beak of which is armed with a piece of partially vulcanized rubber and rests upon the occlusal surface, while the other is a sickle-shaped blade, the point of which passes between the band and the tooth. Then after the remaining cement has been removed and the teeth cleaned, wide banding material is selected as follows: For the incisors it should be three-thousandth of an inch thick (about

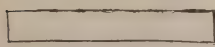


Fig. 2.

No. 40 B. & S. g.) and $\frac{1}{8}$ to $\frac{3}{16}$ of an inch wide, cut straight. See Fig. 2. Fit and solder these in the usual manner, with joint on the labial

surface.

For the cuspids—if they are to be used for the abutments—

the bands should be five-thousandth of an inch thick (No. 36 B. & S. g.) and same width as the others, but curved as in Fig. 3.

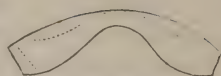


Fig. 3.

These, when soldered with the *joint on the lingual side*, can be easily adapted to the conical shape of the cuspids, leaving a smooth and finished surface on the labial side.

When the bands are soldered they are forced, one at a time, on their respective teeth, for the purpose of seeing that they properly fit, and as a guide for cutting away the excess, as follows: The gingivo-mesial and distal borders are cut down with a pair of curved scissors, so that the bands, where they touch each other over the nearest approaching surfaces, are about $\frac{1}{10}$ of an inch wide, leaving the interdental spaces entirely free.

The labial portion of the cuspid bands, being now narrowed throughout, are contoured to perfectly fit the spherical surfaces against which they rest.

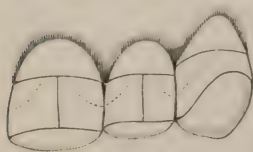


Fig. 4.

The dotted lines in Fig. 4 will show where the excess is to be cut away in this stage of the operation as described.

The bands are now all placed on the teeth and forced to a position where they closely fit—using for this purpose a large convex finely serrated foot-plugger and mallet. Then burnish the lingual and approximate portions to a perfect adaptation, also the labial portions of the cuspid bands.

The next step is to take two impressions. The first in Teague's compound, of the lingual surfaces, from which are made casts for swaging the lingual plate.

For this impression a small tray can be quickly cut and properly shaped of lead plate that is made only sufficiently large for the purpose; and when the impression is taken it can be easily placed in the end of a piece of rubber tubing, when dry and ready for pouring the die. See Fig. 5.

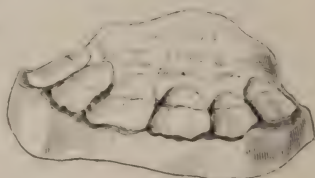


Fig. 5.

The second impression is taken in plaster of Paris, with the ordinary partial impression tray, using only sufficient plaster to submerge the bands. After its removal the bands are carefully taken from the teeth and accurately placed in their respective

positions in the impression, which is then filled with Teague's or any good investing material. This places the bands on a model where they can be soldered without changing their exact relative positions.

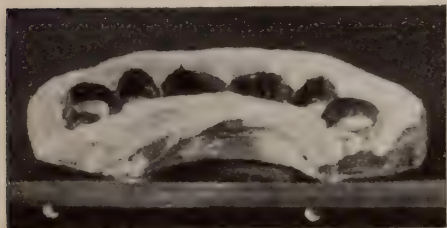


Fig. 6.

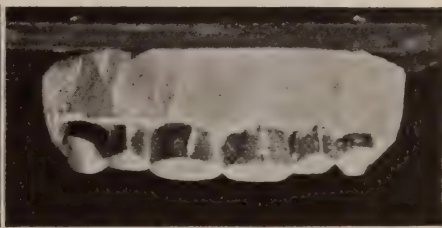


Fig. 7.

Figs. 6 and 7 show impression containing the bands and the model with the bands in position.

Fig. 8 shows the re-enforcing plate swaged and fitted ready to be soldered to the lingual surfaces. It will be noticed that the distal ends of the latter are cut to stop at the joints on the cuspid bands, and the gingival and occluding edges, at the borders of the bands.



Fig. 8.

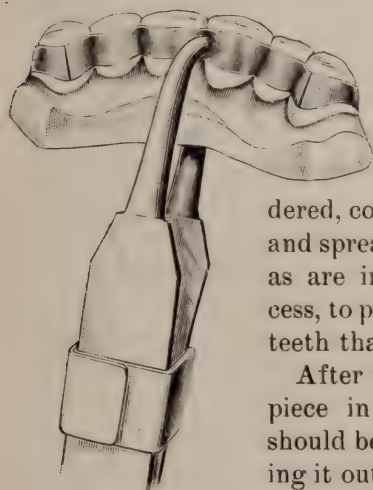


Fig. 9.

This is carefully placed and firmly held in position (see Fig. 9) while solder is freely flowed, uniting it and the bands together; then the piece is turned over and the proximate surfaces are soldered, completely filling the V-shaped spaces and spreading the solder out upon such bands as are intended, in the final finishing process, to possess a larger and firmer grasp upon teeth that have been turned.

After the borax is removed by boiling the piece in dilute sulphuric acid, great care should be exercised in finishing to avoid bending it out of shape. As there is more danger of this after the fronts of the incisor bands are cut away, this part of the operation should be left till the last.

I would advise finishing principally with small carborundum stones and paper disks, with the dental engine.

To prevent the solder from flowing on the inside of the bands, paint their inner surfaces, while in the impression, with a thin solution of plumbago.

Considerable skill and perseverance will frequently be required to place the appliance on the teeth for the first time, and though it may at times seem to be impossible to even start it on over the flaring ends of the teeth, I have never failed to accomplish it if no mistakes have been made. After which it can easily be malleted to place; then the patient is dismissed without attempting to cement it at this sitting. In a few days it can easily be removed, cleaned and cemented.

The material that I have been most pleased with in its construction is rolled platinum and gold plate, with platinized gold or German silver for the re-enforcing plate, using 18 k. gold solder.

In protruding cases, where the first bicuspid has been removed and the space closed by retruding the anterior teeth, I commonly use the remaining second bicuspid for the abutment bands—the spaces having been closed where the first bicuspids were situated.

In protruding cases, also, I frequently solder to the abutment cuspid bands, small hooks or rings on the lingual surfaces, to be used if found necessary to attach small traction wires that extend from tubes on the molar bands.

At the last meeting of the American Dental Society, I exhibited a retaining appliance, on a plaster model, of the kind I have described, and though it was not mentioned in the paper I read on "The Application of Force in Orthodontia" Dr. Ottolengui took occasion to criticise it, by saying among other things on another subject that were equally erroneous:—that after such an appliance was removed, he would consider the case one that would require regulating, because of the wide spaces, which of necessity that would be left between the teeth. This was said, without knowing anything about the action of the appliance in practice or the method of its construction.

If the bands are the thickness I have described, the spaces between the incisors will be six-thousandth of an inch, and between the cuspids and laterals eight-thousandth of an inch, and if it is thought desirable these spaces can still further be narrowed by grinding off a slight portion of the bands at contact

points, in the fitting process. But when it is remembered that six-thousandth of an inch, or No. 35 B. & S. gauge, is the thickness of ordinary writing-paper, I think every person who possesses a proper sense of the æsthetic and useful will not object to spaces of this width between the front teeth, even if they are permanent—the fact being in nine cases out of ten these spaces completely close in a few days after the appliance is removed.

A Unique Method of Backing a Tooth.

BY W. A. SIDDALL, D.D.S., CLEVELAND, OHIO.

NOVEMBER 27th, '97 while on a visit to my brother Dr. C. J. Siddall at Schoolcraft, Mich., I was showing to him the Hollingsworth method of soldering into a bicuspid gold crown, a porcelain facing without investing.

Having made a die on which to swage the backing I was looking around for a piece of soft wood to use as a counter die when my brother handed to me a piece of rubber to use instead.

He suggested at the time that possibly the backing might be swaged directly onto the tooth with rubber. It was not tried and nothing further was said or thought of it then.

About ten days later, having occasion to make one of these crowns, it occurred to me to try to swage the backing in this way. I cut out my backing, made holes for the pins, cut the pins short, placed the backing on the tooth and laid the tooth buccal side down on a piece of soft pine. I then took a piece of car-spring rubber an inch thick and placed on the tooth and struck it two or three sharp blows with a hammer. I found that the porcelain was not fractured and that the backing was driven to fit quite well. The next time I placed the tooth on a steel anvil, placed my rubber over it and found that I could strike it with a heavy hammer without breaking the porcelain and the backing fits—well! like paint fits a board. It is safe to lay the tooth on an anvil or hard wood board if it be a *thick* tooth and there is not much convexity of the buccal surface—but if the facing is thin and the buccal or labial surface is quite convex place it on soft wood or even on another piece of rubber. With a thick facing 22k. gold, No. 28 in thickness, has been driven

down to fit absolutely, though of course a thin backing of platinum or pure gold answers just as well and requires less force. The rubber may vary somewhat in elasticity, but a little experience will enable one to ascertain what strain a porcelain will stand and amount of force required to make the backing fit.

One Piece Gold Crowns.

BY A. N. COATES, D.D.S., W. UNITY, O.

"NECESSITY is the mother of invention," is a saying that has great truth. Very frequently our necessities are circumstances which appeal to the charity of providence which comes kindly to our aid and shows us how to invent for our own benefit.

Dentists as a rule are very ingenious, or, they are visionary artists and can often paint with their imagination, they can draft outlines of their wants and needs upon that large canvass which we will call necessity. Necessity is not the article needed, but with a necessity before us we must work upon it to supply the need; we must picture in our mind what we need, then make it.

Any dentist can make a gold crown, but it is not every dentist who can make one out of one piece of metal. We can not all invent a method. Your necessity and mine become identical in many things. One of us is called upon to plan, to invent. From my own necessity that call came to me. If the result of my work may be termed fruit, here it is, given you freely and abundantly according to the means at hand for dispensing.

The method of making this crown is very simple and inexpensive. An experience with it of four or five years has proven its practicability.

Having reference only to incisor and cuspid crowns, you prepare the root in the usual way, and secure an accurate measurement of its circumference. Now take a piece of gold just as wide as the circumference of the root and mark a line across about one-eighth of an inch from the bottom, dotted line Fig. A, so that the two ends B B Fig. A will be parallel. Select an ordinary porcelain tooth just narrow enough to fill the space between the adjoining teeth allowing also for double the thickness of the gold, out of

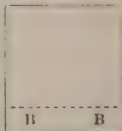
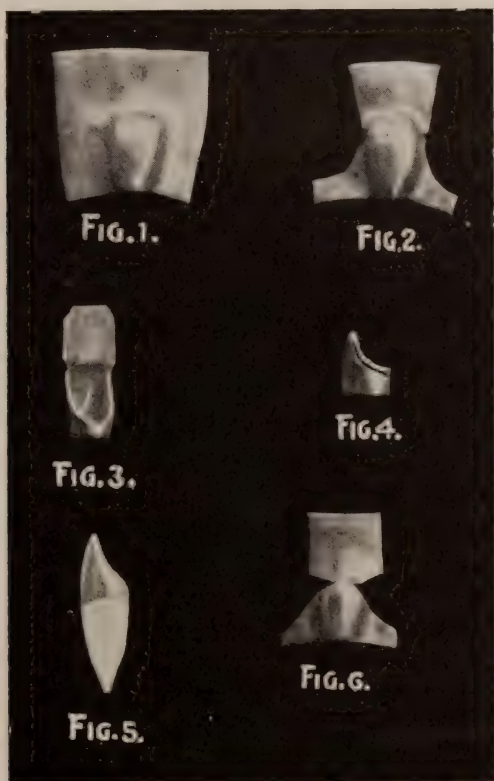


Fig. A.

which the crown is made. Now take the tooth and press it face downward into moldine and withdraw it. Now put a rubber ring over the impression and pour fusible metal, being sure to have the metal strike into the impression of the tooth *first*. This will prevent bubbles. When the metal cools you have a die for stamping the face of the crown. Now get a hard pineblock and



carefully drive the face of the die into the end of it and you now have your die and counter-die ready for stamping the crown face. Take the gold, which should be twice the length of the tooth, and place it so the edge that is to go around the root will come to within about a line of the cervical or neck end of the mold as stamped in the wood and secure it in place by driving tacks on each side of each corner, then place the die over it and press it down as far as possible with the hands, then strike gently with a

hammer and the result will be as shown in Fig. 1. Trim this down as shown in Fig. 2, then bring the ends together and try it on the root to insure against making it too large. Everything now being all right, wire and solder as shown in Fig. 3. The back of the crown being open you are enabled to look into it while securing a perfect articulation. Having the crown properly fitted, etc. bring the back down as in Fig. 4 and solder, having plenty of solder to fill the cutting edge and in the seams for finishing. Fig. 5 shows the finished crown mounted. Cuspid crowns may be made by cutting the gold up near the point of the cusp as in Fig. 6.

One advantage that this crown has over others in its manufacture is the back, which is a part of the crown, and therefore cannot slip out of place while soldering. Any one who knows how to set a porcelain facing will find it very easy to set one in this crown, as any ordinary method may be used.

This method of making a crown does not, as you see, require an expensive system, for a little fusible metal and some of Melotte's moldine will do the work. By the way, Melotte's outfit is all that is needed, and it may be had at any dental depot.

A number of people have written to me making inquiries about my new method of making seamless crowns. This claim has never been made by me, on the contrary it has always been called a *One Piece Crown*.

Hints on the Care of the Dunn Syringe.

BY J. AUSTIN DUNN, CHICAGO.

To those who are using my syringe, and they are many, I will state that the best way to clear the needle when it becomes stopped up, is to hold the point in the flame of a lamp, pressing on the bulb at the same time. It is some organic substance that usually clogs the passage and this is a very simple way of dislodging it. My needles contain iridium, so the heat, necessary in this operation, will not soften them.

If the cap on a Dunn syringe sticks so that it cannot be removed, put in warm water for a few minutes, then grasp the cap with a piece of rubber dam.

Any medicament containing oil softens the rubber bulb, and

after each using it should be cleaned by removing the cap with needle, and washing with dilute alcohol.

For removing a glass stopper from a bottle or anything where the fingers will not hold, a piece of rubber dam will give the necessary purchase.

A Source of Irritation.

BY L. P. HASKELL.

SOME years ago, on a visit to Ann Arbor, I heard Prof. Ford lecture upon the bones of the head. In the course of his remarks he said, "I will show you where absorption of the lower jaw has taken place to such an extent as to bring the mental ganglion to the surface of the jaw, instead of a half inch or more below it as when the jaw is in its normal condition." He showed a lower jaw with the opening directly on top.

This explained what to me had been a mystery in several cases, where there was a very small spot in that locality (the region of the second bicuspid) which was excessively sensitive. Since then I have had several similar cases, one of which was in my office this morning. The only thing to be seen is a white spot about the size of a pin's head. They have always occurred upon the right side, in my experience, a singular fact.

A Case in Practice.

BY DR. G. D. EDGAR, DEFIANCE, OHIO.

MR. W. was sent to me by a physician for treatment. Patient's face was swollen so that the right eye was nearly closed. On investigation I found the trouble arising from the right superior lateral to which a bridge was attached. There was a large cavity on mesial and also on the distal side of the tooth.

I removed the bridge and opened up the pulp chamber; also lanced the gum which was followed by a free discharge of pus. I treated it for nearly one week; but pus continued to discharge and I advised removal, and to my surprise upon extracting the

tooth, extending from the apex was a piece of tooth-pick one-fourth of an inch in length and wedged in so that it was difficult to remove. The patient said he used the round Japanese tooth picks which accounts for its passage through the small opening.

Little Things.

BY A. N. COATES, D.D.S., W. UNITY, O.

CLEAN HANDS: "Ivoryine dust" can be had at any grocery store. It will instantly, easily and without injury remove any black grease from the hands. "Pearline" will do the same thing.

A VARNISH APPLIER: A pellet of cotton held with a pair of pliers is superior to a camel's hair brush for applying varnish and oil to casts, etc., and, besides, you are not troubled with loosened hairs.

VASELINE is a good thing in a dental office. It may be used in impressions in the place of varnish; it is good to use to prevent sticking of flasks, and it may be used to fill in where you forgot to put wax, or where the plaster has not run up sufficiently to admit easy drawing.

POWDERED TIN: The *Pacific Journal* tells us that powdered tin and collodion will make a smooth cast, but does not state *where* to get the powdered tin. Please reply to me personally or in the JOURNAL as soon as possible.

Come brethren, tell some of the little things you do; they may help to make the practice of dentistry a pleasure.

Ex-Section of the Superior Maxillary Nerve, Old and New Methods.

BY H. L. AMBLER, D.D.S., M.D., CLEVELAND, OHIO.

LOOKING at the anatomy of the fifth pair of nerves, we find that the true origin is in the pons as far back as the lateral tract of the medulla oblongata. it is the sensitive nerve of the head and face, and the nerve of motion for the muscles of mastication.

The superior maxillary nerve (second branch of the fifth pair) has two roots, a sensor and a motor, it arises as a flattened band from the middle of the Gasserian ganglion, and passes forward over the greater wing of the sphenoid bone, until, reaching the foramen rotundum, it leaves the cranium and presents itself in the sphe-no-maxillary fossa, from which, it passes through the sphe-no-maxillary fissure to the orbital cavity, where being lodged in the infraorbital canal, it continues forward to the infraorbital foramen, and to the points of ultimate distribution. The Gasserian ganglion is a reddish gray knot about the size of a buckshot, and envelops the posterior root of the fifth pair of nerves, it lies in a slight depression on the anterior face of the petrous portion of the temporal bone. It is outside of the duramater although covered by a reflection from it, and is in immediate relation with the internal carotid artery. In the sphe-no-maxillary fossa, the superior maxillary nerve gives off the posterior dental, which supplies the molar teeth, and about midway of the infraorbital canal it gives off the anterior dental which supplies the incisors, cuspids and bicuspid. In addition to the above the superior maxillary nerve supplies the integument on the side of the head, Meckel's ganglion with sensor filaments, antrum, orbicularis palpebrarum, integument and conjunctiva of the lower eyelid, muscles and integument of the nose, muscles integument and mucous membrane of the superior lip, and the labial glands.

Associated with the fifth nerve are six ganglia, viz: Gasserian; Ophthalmic; Meckel's, or sphe-no-palatine, triangular and reddish-gray; Cloquet or naso-palatine small and oblong; otic; submaxillary.

From the above anatomy we can understand that in ex-section of the superior maxillary nerve we might have slight paralysis of the orbicularis, lower eyelid, or side of nose, owing to the close connection with the nerves of sensation; also if the nerve is not ex-sected far enough back, then only the anterior teeth will be relieved from neuralgia. An operator would hardly be justified in making an ex-section, much less in removing the Gasserian ganglion, without previous practice on the cadaver.

It will be observed that the infraorbital foramen points obliquely upward and outward, and that the infraorbital groove and canal are both in the maxillary bone. In making neurectomy of this nerve, the sphe-no-maxillary fossa is entered either from

the zygomatic fossa, or by removal of its anterior boundary, which is the posterior wall of the antrum. It is taken for granted that a diagnosis has been made of a lesion affecting a nerve trunk or center, the possibility of the disease having a peripheral cause, has been excluded, and it is desirable that no external cicatrices should be left, this necessitates operating through the mouth; therefore, anatomical knowledge, delicate skill, and the sense of touch, must be well developed; however, external incisions may not leave very unsightly scars, and with proper antiseptic treatment, should heal by first intention.

Knives, mallets, forceps, chisels, gouges, saws and scissors, have been largely superseded by the surgico-dental engine, and this has been brought about through the influence and inventive genius of such dentists as Garretson, Bonwill, Cryer, Brophy, Marshall and Curtis. The engine can be driven by a hand-crank or electricity, and is made somewhat heavier than the ordinary dental engine; in it can be used saws from one-half to three inches in diameter; also any form or size of bur or drill; from one to ten thousand revolutions can be made per minute with regularity and steadiness, and operations can be made with easy, and greatly diminished risk.

Cryer says: "In operating with either saw or bur, it is well to have a large bottle filled with antiseptic fluid suspended above the operating table allowing the liquid, by the aid of a small tube, to flow over the parts while operating, thus preventing the bur from clogging, as well as keeping the parts free so that the operator can see just what he is doing."

In addition, we would suggest the use of a small rubber disk or cup over the end of the hand-piece in order to prevent moisture from entering it. Years ago Dr. Garretson realized that the manner of making surgical operations on the mouth, jaws, face, and head, were not satisfactory to the surgeon or patient; he knew that the trained dentist with his manual dexterity, could adapt his methods and some of his appliances to surgical work on the above parts; he was among the first to use the engine in operations upon bone, and he found as others have, that it was of the greatest practical assistance. This is a surgical engine, because it is nearly a duplication of the human arm and hand. In plastic surgery, wherever tissues are to be united, there is no loss of substance and success is more certain when the engine is

used. In the bones, whether taking away the whole shaft, leaving nothing but the periosteum, there is no necessity for opening into the bone further than merely exposing for access, thereby saving the severing of arteries or nerves; it can be used in fractures of the patella without opening into the membranes; in fractures of the skull the parts can be elevated without trephining; the vault of the cranium can be entered at any point, without danger of injuring the dura mater; the superior or inferior maxilla can be removed without other access than by the mouth. With Cryer's engine osteotome any desired section of the skull can be removed without injuring the dura mater.

Operations on the jaws should, as far as possible, be made within the mouth, avoiding external incisions, and with the engine it is not necessary to remove as much tissue, thus healthy tissue can often be saved to assist in bringing about a normal restoration of function.

Resection of the second branch of the fifth pair of nerves was first practiced in this country by Dr. Carnochan, who commenced the operation by making a Y shaped or curvilinear flap exposing the anterior wall of the antrum which was penetrated with a trephine, a smaller one being used to remove a portion of the posterior wall. The sphenomaxillary fossa was thus exposed, where the nerve was found and as much of it excised as possible. In seeking for the nerve in the fossa, great care should be exercised, as it is desirable to have healing without degeneration or destruction of tissue.

Pancoast's operation consisted in making a trap-like flap across the ramus of the lower jaw; this was raised and reflected, the masseter muscle shaved from its attachment, and the coronoid process exposed and sawed off at its root and removed after detaching the temporal muscle; the muscle is thrust upward exposing the zygomatic fossa, across which, but overlaid with some fatty tissue, passes the internal maxillary artery which should be ligated; the external head of the pterygoid muscle is then detached from the great ala of the sphenoid bone; push aside any soft parts, staunch the hemorrhage, thus exposing the nerves of the sphenomaxillary fossa, which may be excised with a pair of curved scissors.

Stoker's operation consisted in closing the eyelids by a single stitch passed one quarter of an inch from their ciliary margins;

this fixes the parts and prevents irritation ; a curved incision is carried along the lower edge of the orbit and parallel to it, including the periosteum ; an incision connects this with a point over the infra-orbital foramen. The nerve and artery are found and separated, the nerve is clamped in a pair of forceps and divided distally. The periosteum of the orbit is next raised from its floor with a flat director, care being used to prevent tearing, as it is very thin, and tearing complicates the wound and results. The contents of the orbit are then raised from its floor by a retractor in the hands of an assistant and the canal laid open by a pair of bone forceps. The nerve is lifted out and detached back to the point of exit from the foramen rotundum. (When excised here Meckel's ganglion would be removed). It may be cut or avulsed ; the latter is preferable, as it may influence a seat of disease higher up.

Dr. Cryer operates, viz. : The eyelids are closed by a single suture, and a curved incision made along the infra-orbital ridge to the bone ; then a vertical cut downward to the infra-orbital foramen ; spreading the soft tissue, remove the periosteum from the bone covering the canal, and secure the nerve with a ligature ; then pass a dental pulp canal plugger into the foramen over the nerve, as a director and guard along the canal until the point is in the orbit. By using a bur in the engine the bone of the roof of the canal can be quickly cut down to the protecting plugger, when the nerve may be lifted from the canal intact. Now pass the nerve with the attached ligature through the opening of a neurotome, which must be worked backward as far as possible ; then holding the nerve tightly, revolve the cutting portion of the neurotome and the nerve will be severed close to the sphenopalatine ganglion (Meckel's).

Dr. Cryer makes another operation which he describes, viz. : Make a trap-like opening exposing the greater portion of the anterior face of the superior maxillary, find the foramen and secure the nerve as before, then with a bur in the engine, remove a portion of the face of the bone immediately below the foramen, thus opening the maxillary sinus. Control hemorrhage as far as possible, and, again using the engine, open through the inner and superior portion of the posterior wall of the antrum and enter the sphenomaxillary fossa, thus exposing the ganglion. By passing a long delicate pulp-canal plugger below the nerve as a means of

protection from the engine bur, the bone of the floor of the canal may be cut away, using a long-shanked bur. After the floor of the canal has been removed, the plugger may be withdrawn and the nerve dropped into the antrum and passed through the fenestrated opening of a neurotome large enough to include Meckel's ganglion; pass the neurotome backward to the foramen rotundum, keeping the nerve tightly drawn, revolve the knife, sever the nerve and pull it away. Dr. Cryer has devised a neurotome which works admirably in these cases.

Dr. Garretson operated, viz.: Place the patient on a pallet and etherize, expose the anterior face of the antrum by a trap cut in the cheek, which trap may be triangular with a limited vertical cut reaching downward, or it may open toward the eye, thus exposing the branches of the infraorbital nerve which is to be dissected, caught by a forcep and held out of the way. Hemorrhage being controlled by ligatures, styptics, etc., the face of the antrum is cut away by use of a bur in the engine. With the nerve secured as a guide, the floor of the infraorbital canal is cut away and the nerve followed along the floor of the orbit. The posterior wall of the antrum reached, the bur is passed backward through it, the nerve still being preserved intact; remove with the bur enough of the posterior wall of the antrum to expose the sphenopalatine fissure, here the nerve is found and passed through a neurotome which is pushed back to the foramen rotundum where the nerve is severed. Care is required to avoid cutting the nerve prematurely by the revolving bur.

In cases of neuralgia the ganglion of Gasser can be removed. This operation is comparatively new. Rose's operation consists in exposing the oval foramen and trephining its seat so as to expose the ganglion. Laplace makes his exposure over and around the ear. Horsley reflects a flap both of soft parts and bone from the super-zygomatic region and seeking the ganglion by pushing the finger along the side of petrous portion of the temporal bone. Dr. Andrews, of Chicago, has been successful in making this operation.

Dr. Garretson operated, viz.: Make a semilunar incision reaching an inch upward, and one and one-half inches at base, this base to be the upper border of the zygoma; dissect up the flap thus exposing the bone, trephine, and with an osteotome saw out the vault of bone, force the bone outward breaking its base. The

dura thus exposed, the fingers are delicately insinuated between the membrane and cranial floor and pushed inward until the ganglion is reached. Exposure of the ganglion is made by incising the envelope of dura which incloses it, care being taken not to wound the carotid artery; hook up the inferior maxillary nerve and cut at the point of passage through the oval foramen. Seizing the nerve cord, the ganglion, the upper surface of which adheres slightly to the dura, is pulled as freely as may be from its bed, and cut or scraped away. The ganglion being removed, the bone and scalp are put back in place after carefully washing away all sawdust. A tent for drainage can be inserted in the trephine cut.

Considerations Relating to the Loosening of the Teeth.*

BY HUGH B. MITCHELL, D.D.S., CANTON, OHIO.

AN intelligent observer, in studying on every hand the incessant variations in organic life, is familiarized with the factors of Evolution. He hourly notes the phenomena of hereditary transmission. Observing the results of this influence on the organism, he notes its ready adaptability to a changeful environment, and the structural modifications which respond to the "use and disuse of parts."

While much of the argument in favor of Descent has been drawn from the observed influence of *heredity*, *adaptation* and *use and disuse* of parts, yet irrespective of their logical relationship to this doctrine, these are ever-present factors in the practical problems of hygiene. These agencies are so constantly observable that, by force of repetition, they have acquired in our minds almost the aspect of necessity. I wish to discuss in a general way, the relationship of these factors to those degenerative processes which attack the alveolar investments of the teeth; and the few citations which I shall make have been selected from the vast store of accumulated data because of their peculiar interest for us as dentists.

Physiologists tell us that the teeth are appendages of the skin—the germ layer. Prof. Haeckel, of the University of Jena, in an elaborate formulation of the proofs of the modifications of

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organisms by *adaptation*, shows that the scales and teeth of fishes, especially of the shark—are homologous. He puts forth the proof that not only the teeth and scales, but the glands of the oral cavity, and the outer skin, are likewise derivatively identical. These conclusions are now sustained by almost every naturalist of note.

Some of the strongest evidences of the modification of organisms by *use* and *disuse* are afforded by the persistent inheritance in man, and the lower animals, of partially or wholly aborted parts, known as rudimentary organs; a reason for the existence of which cannot be explained by any sane theory of "special creation." It is of interest to us to note, in this connection, that ruminating animals, such as the cow and sheep, have no upper incisors, and are provided instead with a tough, elastic gum-ridge, peculiarly adapted to the cropping of grass and similar vegetation; but the significant fact exists that the *rudiments of the teeth are there*, but are never erupted. The "whale-bone whale" is provided with what are known as "baleen plates" instead of teeth; but the rudiments of teeth are plainly observable in the jaws of the embryonic whale. The same is true of certain fossil birds.

"Not one of the higher animals," says Mr. Darwin, "can be named, which does not bear some part in a rudimentary, or partially aborted condition; and man is no exception to the rule." "The chief agent in causing organs to become rudimentary seems to have been *disuse* at that period of life when the organ is chiefly used, (and this is generally during maturity) and also inheritance at a corresponding period of life." "The term 'disuse' does not relate merely to the lessened action of muscles, but includes a *diminished flow of blood to a part, or organ*, from being subjected to *fewer alternations of pressure*, or from becoming in any way *less habitually active*."

It has long been contended that the teeth of civilized races give evidence of structural and functional retrogression. As a result of his comparisons of the progressive recession, and the diminishing weight, of the lower jaws of human skulls, in the Museum of the College of Surgeons, Mr. Spencer says: "Here, therefore, the decreased action of these parts, which has accompanied the growth of civilized habits, (the use of tools, and *disuse of coarse foods*) must have been the sole cause at work. Through direct

equilibration, diminished external stress on these parts has resulted in diminution of the internal forces by which this stress is met. From generation to generation this lessening of parts consequent on functional decline has been inherited." Strong coloring is given to the correctness of these conclusions respecting the comparative results of *use* and *disuse*, by the fact that the teeth of the lower animals, in their native state, and those races of man with whom the coarse dietary of a rude habitat and primitive environment still necessitates the vigorous *use* of the teeth, enjoy a marked immunity from dental ills.

Noting, in his ethnological researches, the retarded eruption, relative structural weakness, and diminished usefulness of the third molars, Mr. Darwin was inclined to the belief that these teeth were tending to become rudimentary in the more civilized races of man. "But," said he, "this is denied by eminent dentists." These eminent dentists probably gained more eminence by this great naturalist's modest deference to the value of their opinions than they ever attained by their contributions to the truths of Biology.

The teeth of the American people especially, it is claimed, seem to be yielding to the dual adversity of functional retrogression, as a result of *disuse*, and the inherited effects of an acquired inadaptation to *use*. The intermarriage, common in this country, of a people exhibiting a variation of racial and national types, and the oftentimes resultant caprices of heredity, manifested in the offspring in anomalous arrangements of the teeth, disproportionate size of teeth and maxillæ, and the very frequent relative proportions of the latter, can reasonably be considered a contributing influence; viewing these conditions as tending to impair, or discourage, the active and general use of the teeth.

Prof. Oscar Schmidt, the German naturalist, speaking of the modification in organs produced by *use* and *disuse*, says: "Compulsion to more diligent *use*, inducements to *disuse*, are the varying conditions of life. In both cases, therefore, it is a question of adaptation. Looking at nature, profound modifications are most readily demonstrated as the consequence of *disuse*; but artificial selection gives numerous examples of both sorts: especially where disproportionate *use* of certain organs is combined with simultaneous *disuse* of others." Prof. Schmidt cites, as familiar products of artificial selection exhibiting these results, the draft

horse and the racer. He further emphasizes the results of adaptation by citing the fact that "The blindness of cave animals admits of no explanation, but that with the increasing uselessness of the eyes during accommodation to cave life, the exchange of material in the less active organs gradually diminished and atrophy was initiated."

"It is well known," says Mr. Darwin, "that use strengthens the muscles in the individual and complete disuse, or the destruction of the proper nerve, weakens them. When the eye is destroyed the optic nerve becomes atrophied. When an artery is tied the lateral channels increase, not only in diameter, but in the thickness and strength of their coats. When one kidney ceases to act from disease, the other increases in size and does double work. Bones increase, not only in thickness, but in length from carrying greater weight."

No dentist can have failed to mark the results of this principle of compensatory adaptation on the teeth. In many cases, teeth used under *proper limitations* for the attachment of bridge-work, seem to grow firmer under the added stress of mastication and give every evidence of an improved cemento-alveolar innervation. In cases where the teeth have been entirely or partially lost, the gums become hard and unyielding through their continued use in mastication—indeed, to a degree of practical efficiency in many cases. When the molars are lost, the anterior teeth (and it has especially been noted in the lower) respond to the necessities of the emergency with something like a positive aptitude for hard work, giving every evidence of a healthful response to the wholesome stimulus of increased exercise. Those who have had occasion to test with the forceps, the integrity of the molar attachments of an habitual tobacco-chewer, have doubtless found the experience a source of both exercise and profitable reflection on the effects of use; and whatever else may be said of the habitual chewing of "gum," by children, it must be admitted that those, in general, who use it, have a long advantage in every aspect of oral hygiene over those who do not.

Nature economizes her energy too closely to long tolerate a useless organ. The disuse of an organ invariably tends to its absorption. Dentists are familiar with the fact that a tooth, for any reason deprived of its occlusal antagonist, seems to abandon its normal relationship to the alveolus and protrude much beyond

the mean line of occlusion. We term teeth in this condition "elongated." It would probably be nearer a general truth to say that they are partially aborted. Under such circumstances there are present, in time, the evidences of atrophic changes, which in many cases effect the complete detachment of tooth from socket. The duration of this process is, I am well aware, modified by the normal integrity of the alveolus and due regard to oral hygiene; but the calcareous and even purulent concomitants of this condition, are not to be confused with the prime cause, the diminished use of these teeth.

A number of years ago I questioned a distinguished dentist regarding the cause of the phenomenal elongation of a tooth under the circumstances I have mentioned, and which we had under observation at the time. There was no apparent external or peripheral cause, and yet the tooth was sufficiently elongated to impinge without apparent discomfort to its owner upon the hard ridge of gum which marked the site of its late co-worker on the opposite jaw. My adviser gave me the assurance with every evidence of scientific profundity that the migratory proclivities of that tooth were explicable only upon the theory that it was actuated in such cases (I suppose by a sense of its bereavement) to hunt up its missing antagonist!

That a tooth, or for that matter, any other organ or tissue in an abnormal state, is gifted by nature with anything like the attributes of instinct for such emergencies, is an absurdity which reaches its climax in the extent to which theories of this type are accepted as an all sufficient physiological, or rather metaphysical, *cause*. "Healing by first intention" is a phrase which still survives a kindred theory of the nature of cellular reconstruction. By reasoning of an analogous type, Archdeacon Paley and other writers on Natural Theology, accounted for the spleen and other rudimentary organs in man (such as the vermiform appendix) upon the theory that they were providentially designed to hold the active organs in position, and, incidentally, to pad out the divinely symmetrical proportions of the human frame. Quite in keeping with this are those impressively oracular explanations that the phenomena of life are due to a "vital principle;" and that the qualities of gold are due to its "aureity;" and that certain otherwise inexplicable phenomena are due to "Nature's abhorrence of a vacuum."

That disuse, or functional inactivity, is a modifying factor in every aspect of dental etiology, seems almost axiomatic.

The function of the teeth being essentially mechanical they are not remotely analogous, in this respect, to the limbs of the body; and like them, their use is a matter of the habit or option of the individual. There is, too, a similar correspondence in the general effects of *use* and *disuse* of these analogous functions; and the nature of these effects are more readily observable than in those organs more intimately and vitally related to the digestive processes. No one will deny that there is a pointed difference between a function purely manipulative in its nature, and that carried on through the office of specialized cells; and, if we allow that a due consideration of *function* is of any value in the conservation of the dental organs, it must be apparent that the prophylactic and remedial devices of dentistry are peculiarly modified by considerations quite outside the conventional limits of cellular pathology.

The relative use and disuse of the teeth is, therefore, an important part of the field of clinical inquiry; especially in those obscure, morbid affections of evident constitutional origin.

Of late years, the uric acid, or gouty, diathesis, is looked upon as a predisposing agency in at least one phase of what is provisionally known as pyorrhea alveolaris. Dr. Peirce, who has made valuable contributions to our knowledge of this subject, has established a very clear differentiation of the gouty, or constitutional, and the local, or salivary, origins of this condition; in the former case there has been demonstrated on the roots of teeth sacrificed to this condition, the presence of urates in both the amorphous and crystalline state. I shall not repeat, nor is it at all necessary to amplify, Dr. Peirce's description of the morbid local sequelæ following the deposition of these infiltrated irritants.

"Whatever view may be taken," says Dr. Peirce, "as to the *origin* of the uric acid, whether it is due to an imperfect oxidation of the food constituents, or whether it is the product of abnormal metabolism of protoplasmic tissue, or to faulty innervation, the fact remains that in this diathesis there is an abnormal amount of this uric acid and its salts in the blood. Owing to the non-diffusibility of uric acid, it is but imperfectly eliminated from the blood by the kidneys; accumulating in consequence it enters into combination with sodium and calcium, forming urates.

When the amount of uric acid salts attains a certain percentage they are eliminated from the blood through the walls of the capillary blood vessels, passing out associated with lymph. The tissues which become the seat of this salt exudation are pre-eminently the connective tissues; those tissues presenting the greatest degree of density and the least degree of vascularity. Hence the tissues forming joints become the primary seats of the uric acid deposits." "Inasmuch as all portions of the body have been shown by pathologists to be liable to uric acid deposits, it is not at all strange that the alveolo-cemental membrane, composed largely of connective tissue, should also become a depot for uric acid deposits. It is more than probable that as a predisposing cause there might co-exist some impairment in the nutrition of this membrane dependent upon either local mechanical force, or some obscure faulty innervation."

Wedging, and malleting, are suggested as possible instances of "local mechanical force." But what is the cause of this "obscure faulty innervation?" An important question, this.

It is to be noted that the tissues forming joints become the primary seats of the uric acid deposits; but Dr. Peirce's speculations as to the predisposing cause of their lodgment in the cemento-alveolar integuments, takes no consideration of the fact that the relationship of tooth and socket is itself essentially that of a joint; and that there is as complete similarity in the functional as there is in the structural likeness of connective tissue in general. It is to be observed that however deficient the vascularity of connective tissue, and however deficient, otherwise, its capability to successfully eliminate infiltrated irritants, these tissues are so disposed in the body as to constantly invite the direct stimulus of physical exercise. Connective tissue is designed to resist,—indeed its vital integrity is largely dependent upon—the external stress to which the organism is constantly subject; whether it be the stress of mastication or a similar type of physical exertion.

Use—"alternations of pressure"—manipulation—stimulate the vascular resiliency of these tissues and strengthen their cellular resistance. The natural massage of exercise is a cooperating factor in the direct elimination of infiltrated irritants, and prevents of their ingress. The disuse of the teeth, and the consequent absence of this stimulus to the cemental membranes, weakens their integrity and initiates a condition favorable to the undisturbed lodgment of the transuded urates.

In studying and comparing the dental aspects of this diathesis I have been prompted to believe that its clinical exhibition is most manifest in those teeth of the individual *less subject to habitual use*, notably the incisors.

The ingestion of rich, nitrogenous, and *easily masticated* foods, and the consequent diminished use of the teeth, are co-existent and correlated factors in the evolution of gouty pyrrhea alveolaris.

It must be borne in mind, however, that congenital malformations of the dental arch, and departures, of any character, from a symmetrical occlusive alignment—whether due to natural causes, or the defective or inefficient devices of the dentist—impair the utility of teeth so affected, and this becomes a specific source of discouragement to their use.

The treatment of a constitutional vice, inherited, or acquired through years of over-indulgence in eating and drinking, has but few aspects which are free from discouragement to the dental practitioner. Without discrediting the value of constitutional treatment for the elimination of uric acid compounds, it is a matter of immediate and practical concern to us to discover and remedy, if possible, the local conditions so peculiarly alluring to the deposition of these salts. I believe that the chief of these conditions is the vital depression and functional inertia of disuse. The treatment of teeth indicating a liability to the local exhibition of this diathesis must, therefore, contemplate their *more active use*; and in the advanced or suppurative stage of this affection, constitutional treatment, and the conventional local instrumentation for the removal of calcic deposits, must be supplemented by the appliance of retaining devices, or splints, to effectually and permanently prevent the undue luxation of the loosened teeth during their use, and re-engage their active occlusion.

Courtesy in Reference to Others' Failures.*

BY F. D. DAVIS, D.D.S., MINERVA, OHIO.

IN every trade and profession some members seem to imagine that the only way to gain a reputation is to undermine the reputation of others. In efforts to reach the goal of fame, they would make stepping-stones of their fellows and do them injury on every tread. Sensible people, however, distrust those who speak uncharitably of their compeers, so that frequently ungenerous comments reflect unfavorably on those who utter them. When dismissing our patients, we are not always sure that they will return to us for future treatment. In the course of time they may get into other hands. Some remove to distant localities, and find it inconvenient or impossible to come again. Others, by nature, are inclined to wander and are fond of making changes. Some exchange with a view to economy; others perhaps, from lack of confidence or a fancied neglect. Some fail to return because of unpaid bills for former operations, and such persons are usually ready to misrepresent or malign those whom they have defrauded. Many an excellent and faithful dentist has been declared the author of discreditable operations which he never performed. Many have been charged with having inserted fillings (with the assertion that they soon after fell out) in cavities that had never been touched by a dental instrument. The decay and destruction of entire dentures, resulting from sheer neglect and carelessness, are often charged to malpractice on the part of some dentist, who, perhaps, simply introduced a single filling, or removed beds of calculus and polished the stained surface of enamel. "Your dentist has shamefully neglected your teeth and allowed them to go to destruction," remarked a dentist recently to a lady who in emergency called on him to quiet the demonstrations of an aching bicuspid. He did not succeed and if he had known the history of the case, he probably would not have ventured so untruthful a statement. Fortunately the lady rebuked him for the unjust insinuation. To take for granted all that comes to our ears from disaffected or grumbling visitors is neither wise nor just and certainly fuel should not be added to the fire "by sympathizing

* Paper read at Northern Ohio Dental Society, June, 1897.

with their complaints or indorsing their scandal." There are various ways of doing injustice and injury to our neighbors even without charging them with incompetency or denouncing them as "quacks." A feigned look of astonishment when scrutinizing their work, a significant shrug of the shoulders, or a disapproving shake of the head, will have the effect of undoing confidence in the operations of their former dentist, and sometimes prove more damaging than open denunciations. To ask if the doctor was not in a hurry when he filled their teeth—if the doctor himself performed the operation—if the work was not done by a student; or, if the doctor's eyesight is not failing him, etc., are insinuations that excite suspicion, and convey the idea that the operations have been slighted. Nor does it make things smoother to add in a semi-apologetic manner, that the doctor was considered a pretty fair sort of a dentist once, but unfortunately he is getting old. All this is needless and uncalled for, as it reflects injury on those to whom such references are made, and fills with distrust the minds of those who have received their attentions. To sum up, no good whatever can result from such ungenerous criticism.

The cause that tends to failures following dental operations are many, and when considered it is a wonder that failures are not more frequent. Very many individuals defer their visits to the dentist until driven by dire necessity to seek relief from pain, and it is then found that their teeth are in a sad plight. Some teeth present large proximal cavities, or crowns so decalcified and broken down that reliable walls for retaining fillings can hardly be secured. Exposed pulps, congested pulps, dead pulps and alveolar abscesses manifest their presence, and yet it is expected that such dilapidated and diseased organs can be so restored as to be better than before they became so wretchedly neglected or abused. People who are so wilfully careless and negligent are not entitled to a great degree of sympathy if trouble ensues. Some sufferers seem to obtain a slight grain of satisfaction if they can only saddle the responsibility for their mishaps on others, and their dentist is, in some instances a convenient scapegoat on which to work their saddle.

When discontented parties come to us with their complaints, it is clearly our duty to vindicate as far as possible the good standing of our confreres, and at the same time remind our visitors that personal interest and vigilant care on their part is abso-

lutely necessary to escape the consequences of neglect. Let us do justice to all others as we would wish justice done to us, and may we never forget that professional courtesies are due to every honorable dentist, and we will be rewarded with happy reflections as well as the good will and esteem of our professional brethren.

ALL SORTS.

Painless Extraction of Teeth.

For hypodermic injections for the painless extraction of teeth, I use the following formula, in which the ingredients are so proportioned that I am yet to have an ill-physiological effect from cocain. The formula is as follows: Cocain, 15 grains; glycerin, 5 drams; nitro-glycerin, 1-10 of a grain; sulphates of morphia and atropia, 1 grain; carbolic acid, 3 drops; and distilled water sufficient to make a two-ounce mixture. I will analyze the formula as follows: There is sufficient glycerin to localize the cocain holding it in apposition to the parts a sufficient length of time to complete the operation, and not too long so that it acts as an irritant and causes a swelling. In patients who have a poor circulation sometimes there is a swelling with this formula, but it will be painless and will subside as soon as the anesthetic, with which you have infiltrated the tissues, has become absorbed. The anesthetic figures a $1\frac{1}{2}$ per cent. solution of cocain.—C. PAYNE, *Stom. Gazette*.

Persistent Abscess After Extraction.

On April 18, 1895, Mr. B., aged 23, called at my office to obtain relief from an abscess caused by the inferior first and second molars of the right side. He said that the trouble dated back about a week, and had been gradually increasing in severity up to the date of my first seeing him.

There was considerable swelling of the face, so much so in fact, that it was impossible to make any examination whatever. The patient had only taken a little milk in the way of nourishment for several days. There was almost complete loss of appetite, some headache, and about two degrees of fever. Judging from the patient's condition that a putrescent pulp in one or more of the molars was the cause of the trouble.

and it being impossible to get the mouth open, I procured the assistance of a physician who administered chloroform. We succeeded in forcing the mouth open (not without considerable difficulty, however). I was thus able to extract the affected teeth. Contrary to my expectations, no pus followed the extraction. I then made a deep incision with a lance and still no pus. This was disappointing to me. Disliking to make an opening on the outside, I gave the patient a wash containing tincture capsicum, and instructed him to report the next day. This he did, and informed me that during the night the abscess had broken on the inside of the mouth, and fully a teacup of pus had discharged. As a result, he was feeling much relieved, had little or no fever, and had eaten some breakfast, almost the only food for three days. After giving him instructions in regard to keeping the mouth thoroughly cleansed, I told him to report daily until recovery was assured.

On the fifth day he returned with a small soft swelling near the lower right side of the chin. I again sought the advice of the physician who had previously assisted me. As the abscess was undoubtedly pointing externally, he suggested that an incision be made, as the resulting scar would be much smaller than it would be without surgical interference. This was done, the pus pocket syringed with peroxid of hydrogen, and a tent of iodoform gauze put in to prevent closure. The next day the patient returned and the case seemed to be progressing favorably. However, on April 26th, the patient returned with a swelling similar to the one just described, but located on the right side near the angle of the jaw. This was likewise opened, and after some discharge of pus, it was syringed with peroxid of hydrogen, the solution being forced completely through and out at the first opening on the chin. I continued this treatment for several days, but as the discharge did not seem to lessen in quantity, I now suspected necrosis and probed the canal. I found a small detached portion of bone nearly as large as a dime, and perhaps a little thicker. This was removed, and the canal syringed with a dilute solution of tincture iodine, tents of iodoform gauze were inserted, and the patient was dismissed. The following day, there still being some discharge, the above treatment was repeated, but on the fourth day there being no discharge, a dry dressing was applied. This was repeated every two days. By the end of a week the patient had entirely recovered, and up to the date of writing there had been no recurrence of the trouble.

I believe the majority of text-books on dental surgery advise extraction, and give the reader the impression that no other treatment is necessary, but in such a case as the one just considered, this theory is not applicable, and for this reason may prove of interest to members of the profession. My conclusion is this—the pus had evidently burrowed

under the layers of muscle so deeply that it could not escape, and the inflammation had been so intense as to cause necrosis of a small area, which kept up the irritation after the removal of the primary cause, the teeth.—W. H. PALLETT, in *Items*.

Cocain as a Safeguard in Anesthesia by Chloroform.

A London chloroformist claims that the trigeminus is responsible for the dangers to the heart and respiration by the reflex irritability of its terminations at the mucous membrane of the nose. His method is to anesthetize the nasal mucous membrane, which is done by requiring the patient to blow his nose and then, leaning forward or sitting, but never lying, to sniff a centigram of a powder consisting of 10 per cent. of cocain hydrochlorate and some inert substance. Repeat in about three minutes, and begin use of chloroform. In fifty cases in which cocain was employed in this manner the conclusions were: the commencement of anesthesia is less disagreeable to the patient, who never makes defensive movements; oftentimes the excitement stage is wanting, and is always slight, except in cases of alcoholics; during anesthesia the patient rarely vomits, and if vomiting does occur it is accompanied with slight retching; upon awakening the patient experiences no disagreeable sensation and is not troubled by the after-smell of chloroform or ether.—*Daily Lancet*.

The Fracture of Platinum Pins in Teeth and the Cracking of Teeth in Soldering.

The fracture of platinum pins in teeth and the cracking of teeth in soldering is a difficulty, or rather annoyance, which occurs at some time or other to all interested in the mechanical aspect of dentistry. The following views, therefore, on this question, of some twenty men experts at the bench and of long experience may be of interest:

B.—Will solder 100 out of 100 teeth without accident. He generally bends pins towards root, sometimes rivets and sometimes bends only. Thinks some men are scanty with their backing, which should cover the whole tooth.

G.—Always rivets the teeth, but only lightly, and is very careful to get the heat up very gradually. Countersinks side of rivet. If a flat tooth rides on a stump, the chances are that the tooth will give in a short time.

P.—Has some teeth break, but does not think it is always the fault

of the tooth, but considers that more break now than used to. Always rivets teeth, and countersinks side of rivet. There is great danger if teeth are touching on plate; they should never touch. Punches holes on boxwood which causes depression. Depressed side goes next to tooth. The bur on the other side is filed away, and the hole countersunk.

L.—Always rivets, except where backing goes against vulcanite; pins are then left intact, only they are bent so as to form a hold in the vulcanite. Sometimes teeth crack across pins.

P. G.—Punches holes, and does not rivet, only slightly bends the pins together, and does not countersink. Has met with fractures of pins, and thinks them due to peculiarity of bite.

J.—Never has any teeth come off; does not rivet before soldering. Solders on plaster and sand mixed.

W. J.—Bends pins after punching holes, and lightly taps down with riveting hammer; then runs file over pins. He fits his tooth after backing is on, not before. Invests in plaster and sand. Carefully heats up. Rarely or never has accidents; might have three in a year among some thousands used.

S.—Used to rivet teeth, but owing to fractures and accidents has discontinued the practice. Prepares backing, countersinks holes both sides, and then without cutting off pins “nicks” them the way he bends them close to the backing, so that they come to lie at perfect right angles over the backing. Uses large numbers of teeth, and practically never has an accident.

J. P.—Does not find one tooth in a thousand break, nor the pins. Punches holes in backing, does not countersink, nor rivet, nor cut pins, but simply bends them rootwards to hold backing firm. Greatest danger is in the heating. Makes his cases nearly red hot.

C.—Always cuts his pins short, and then splits them across, and bends them longitudinally. Countersinks slightly on both sides. Thinks accidents happen through overheating, as on cracked or broken teeth solder can be seen on the side of backing touching tooth. Very rarely meets with fractures, practically never.

B. W.—Rarely cuts pins of teeth to shorten them, and does not rivet, but bends pins. Says side of backing touching tooth is already slightly countersunk by the pin of the punch, other side he countersinks. Solders as usual on sand and plaster. Thinks would warrant to solder 99 out of 100 without failure.

Ph.—His accidents are very rare, more frequent in vulcanite, than in flat teeth. Countersinks backing on both sides; generally only bends pins. Likes alloy backing in preference to gold. Always solders on asbestos fibre.

W.—Rarely finds tooth breaking. Countersinks both sides; thinks fractures occur if backing does not perfectly fit back of tooth, for bad fit causes leverage. Does not rivet, and solders in sand and plaster. Thinks riveting a danger.

St.—Has very rarely pins break off or cracking; believes it is borax getting between tooth and backing, or overheating, which produces accidents. Always slightly rivets, and countersinks on side of rivet. Solders on plenty of sand and some plaster.

J.—Uses many thousands of teeth annually and does not have a tooth cracked or pins smashed once in three months. Thinks that he would use 99 out of every 100 teeth without any such mishap. Never rivets pins, nor cuts them short, only bends them over and then files them down a little. Makes case red-hot, after investing it in the usual way. Heats very gradually. Thinks fractures occur through overheating. Riveting tightly will be sure to make both go during soldering.

X.—Always countersinks holes both sides, and rivets before soldering. Has no accidents; if there are such, considers them due to tight riveting.

W.—Rarely or never has breakages of pins or cracking of teeth. When holes are punched in backing he only slightly countersinks side nearest to tooth; the side of rivet he well countersinks, and then rivets lightly, as hard riveting causes a great strain and weakness. Cases when invested should be heated very gradually, and cooled very slowly. Non-attention to these points will bring about certain mishap. Thinks, as a rule, would fix 99 out of 100 teeth without failure. Has in hand case of lady who persists in having teeth fixed in and out; these same teeth have gone through the fire three or four times without the least accident.

H. M.—Does not have any teeth breaking off; if a breakage occurs it is due to the bite, but accidents will arise if the backing is not brought close to the tooth. Sometimes there is a bur at the holes, or a little porcelain bump is sticking up on the back of the tooth. Only bends pins; but if bite goes on pins he rivets. Backing should be brought right up to cutting edge. Remove wax with boiling water, and of course heat gradually.

Gr.—Punches holes in backing, then countersinks on side where pins are bent. Then cuts pins, so that when each is bent towards the other they touch transversely. Cuts little groove in backing with sculptor, files inside of each pin, and then they bend easily. Heats gradually; never has fractures of pins, or cracking of teeth.

C. H.—Has had pins come off in flat and vulcanite teeth. Does not countersink on rivet side. Teeth sometimes give way months and

years after making. He simply cuts pins off, and bends them together. Always solders on plaster alone.

H. A.—Rarely or never has breakage. Thinks men are careless in punching holes, and thus strain on pins breaks these off. If at any time he finds pins do not readily slip into the holes punched at once uses fresh backing. Thinks some men in bending pins do it close to porcelain, and thus break the pins really before the case is soldered.

Jhn.—Prepares backing by punching holes, which are countersunk on both sides, and bent over, and sometimes slightly riveted. Pins and backing are carefully scraped. Fits tooth sometimes before and sometimes after backing. Accident the rarest thing. Considers failures due to riveting too hard and general carelessness.

Rt.—Takes backing, punches holes, and countersinks on side where he rivets. Always rivets, and does so on the side which goes on to the tooth; he then runs his sculptor across backing, taking in the two holes also. Sometimes he finds a little ridge of mineral near pins. In that case he bends backing a little to allow for it. Riveting ought to be done on lead, and the lead often changed, as it soon gets condensed. One ought to be careful not to use too much borax, as excess will cause accidents if it gets behind backing. Never has teeth crack or the pins fracture.—E. DUVAL, *Jour. British Association*.

The Use of Copper for Preserving Decaying Teeth Without the Objectionable Features of Copper Amalgam.

With a saturated solution of chloride of gold a given cavity is carefully wiped by the use of cotton wrapped on a fine broach—in deep-seated caries or very soft teeth. The nearest points of nerve exposure should either be capped or well varnished—being careful to thoroughly saturate those points where recurrent decay is most likely to appear.

Now, with a blower especially constructed, copper bronze is quickly blown into the cavity while it is yet moist. Should it be desirable to obtain instantaneous oxidation at any given point or in the entire cavity, another application of the chloride is made to the copperized surface and another coat of powder is blown on the moist surface.

Thus the cavity is lined with an oxide which, while it differs chemically from that obtained by the old-time combination of tin and gold, and recommended by such men as Palmer, especially at cervical borders or the oxidation of copper amalgam is certainly more effective because instantaneous and penetrating. By the old methods these results, always valuable, could only be reached by months or years of waiting for oxidation to take place.—DR. J. W. DENNIS, *Dental Review*.

Root-Filling Material.

As a root-filling I use a paste made of equal parts of iodoform and oxid of zinc mixed with oil cinnamon, a preparation that I use almost exclusively for root-filling, and one that seems peculiarly suited for immediate root-filling after the extraction of live pulps. The cinnamon deodorizes the iodoform almost completely, making its use unobjectionable in the mouth of the most esthetic patient. This paste can be used to advantage for filling even the smallest root canals, as it can be easily introduced on a smooth broach and pumped into the canals. Then by pressing the excess that should be left at the mouth of the canal firmly with a pellet of cotton held in the pliers the excess of the oil cinnamon can be removed and at the same time the filling in the root firmly packed. This makes a filling that is permanently antiseptic, and, so far as I have been able to judge, possesses all the advantages claimed for any root-filling. It seems entirely non-irritant when placed in contact with the soft tissue, making a satisfactory nerve-capping, and I believe that in cases where only a portion of the live pulp has been removed and the operation has been aseptic, if this dressing be used and placed directly in contact with the remaining portion and the cavity filled, the lesion will heal by first intention and the vitality be permanently preserved.—N. C. LEONARD, in *Dental Headlight*.

Some Features in Bridge-Work.

The following is an abstract of an article by Dr. H. C. Register, published in the *International Dental Journal*: I desire to call your attention to the uncertainty of the present method of attaching bridges and crowns, especially those forms where several anchorages are utilized.

“Phosphate of zinc is the agent in general use, and where the fixture contains several abutments its application must be made so rapidly that without intelligent assistance there is difficulty in properly adjusting it. It is a matter of considerable concern, after a beautiful piece of mechanical work is ready to be placed in position, whether we succeed or fail in making everything perfectly secure, and carry the bridge to a proper adjustment. To do away with this apprehension of failure, time should be at the disposal of the operator, and for greater artistic results a *better* crown can be made use of. To get time one attachment should be fixed, and the others following it in rotation, under conditions that the cementing or connecting process should be of such a character and disposition to resist to the greatest extent bacterial invasion.

We might say of phosphate of zinc, with our present knowledge of

incipient caries, that it is a preventive of bacterial intrusion, less its comparatively rapid dissolution. This contra-disposition, in connection with its lack of strength when stress is applied, makes it non-dependable for carrying a bridge many years, unless the fixtures be so accurately made as to be self-supporting. In combination, however, with an alloy freshly cut and of good test, thoroughly mixed together, we have almost an ideal preserver of tooth tissue, less its inartistic appearance—a material into which is worked a matrix that is mutually self-sustaining, both for filling and anchoring bridges or crowns. To apply this retainer in bridge- or crown-work the porcelain face or veneer should be of special form and appropriately made, so as to allow not only of manipulation, but of artistic construction as well.

The filling of root-canals with alloy, and the foregoing combination of it and phosphate of zinc, is the method that has proved most successful in my hands. To apply a retainer of this character, the filling must be worked in by manipulation, either on bridge or crown, and the supporting base must be appropriately made to permit the filling-material being placed with confidence, and the artistic relations fully carried out in the work.

You will notice, if you are at all familiar with the Mason crown, that the face slips off and on the backing to the diameter of about half of the face of the root. Thus in placing the base of either crown or bridge into position, and the porcelain face removed, you have half the root exposed by simply opening up a floored ferrule, and thus exposing the pulp-chambers. Where half ferrules are used the same result, of course, is gained.

The pin for anchorage into the pulp-chamber can be soldered directly to the backing, or a split post, with the ends bent in opposite directions resting upon the ferrule, packed to position through this opening.

Where amalgam is used slight oiling of the gold should precede the adaptation to prevent its amalgamation. Everything being ready, the parts dried, a creamy compound is made of phosphate of zinc alone, or equal parts of phosphate of zinc and alloy thoroughly rubbed together under a heavy spatula, and the inner edges of the ferrule anointed and pressed to place.

If preferable, in this part of the work, phosphate of zinc can be used alone; this is to fix the bridge or crown to position.

After drying that part of the retainer and with an excavator removing from the canal through the opening into root all excess, and dessicating by means of compressed air, repeat the combination mixture, except to make the second and other mixings stiffer in the phosphate of zinc and drier in the alloy. After thoroughly mixing with the spatula

manipulate with the fingers into a putty-like consistence, rolling it in the fingers to about the size of the opening in the canal. If the retaining post is attached directly to the bridge, pass it in piece by piece till the parts are thoroughly packed.

If using a split post, after filling the upper portion of the canal, press it home to position, and fill the same as if it were permanently attached, finishing the last layers with alloy alone. Where a half ferrule is made, this is carried to the edge of the root under the gum festoon. The tooth crown, which has previously been properly adapted, is now connected with the base either with phosphate of zinc or chloro-percha.

Where it is desirable to resist the greatest stress I recommend the use of alloy alone, packed in the same way as the preceding mixture.

In spaces between the abutments, where resorption has followed the extraction of teeth, there is characteristic tooth and gum contact which gives an artificial appearance to the facial expression.

To overcome this artificial appearance it is necessary to reproduce the gum festoon. The reforming of this on the faces of the teeth consists in taking the mucous and submucous tissue, with some fibre, from the palatal or lingual portion of the jaws in the form of flaps cut in festoons as wide as the teeth where they join at the interproximal spaces, and stretching it over the faces of the teeth, allowing the flaps to be twice the length required, proportionately large to allow for shrinkage.

The granulating process from where these flaps are taken may be packed with iodoform gauze or cleansed with an antiseptic wash. The cutting can be done with very little pain with cocain or eucain hypodermically injected; and where specially desired by the use of the Mason crown, one or more operations can be done at a sitting.

This is the method which I have employed in producing the plastic reformation of gum festoon. But there are conditions where one flap to each space can be made and laid over the faces of the teeth and a stitch made between each approximal space, drawing it tightly around the necks of the teeth and trimming away excessive gum tissue in the reforming of the gum festoon.

The case of the bridge being in position, the crown faces are first placed on the root abutments. I prefer to make these attachments with the phosphate of zinc, which will remain firm for several years and can be readjusted easily without disturbing the other parts of the fixture. The flaps, after being cut and dissected away from the periosteum, are caught by ligatures passed under them and drawn forward, thus suspending all hemorrhage; as many being done at one sitting as is advisable under existing conditions. After which the crowns are flowed over on both contacting surfaces with phosphate of zinc and pressed to place.

pinching into the interproximal spaces, followed by thorough drying, when the ligatures can be removed, allowing them to fall over the faces of the teeth, and the palatine portion packed with iodoform gauze. This is not essential, however, as an antiseptic wash answers every purpose."

Board of Censors in Place of Examining Boards.

Regarding the displacing of examining boards, Dr. B. F. Arrington (*International Journal*) says: "In place of examining boards I will suggest that each State create a board of censors, to whom shall be reported any and all cases of malpractice or improper professional conduct, and before whom the accused may and shall confront his accusers, and, if convicted, shall be suspended or barred the privilege to practice in the State in which the offence was committed; and the secretary of the board of censors shall be required to report proceedings and ruling, with seal of office, to every other board in the several States, who shall place on file and furnish copy to secretary of State dental association or society, to be read at ensuing meeting. By such a procedure the unworthy could be rightly dealt with and the public protected more securely, and the profession sustained better than by the present provision and arrangement of examining boards."

A Few Points on Taking Impressions of Mouth and Making Dentures before Teeth are Extracted.

In making partial and even full dentures, I have proven it to be practicable to take the impression with the natural teeth in the mouth, complete the denture, then extract the teeth and put plate into place.

Great care is needed in taking the impression. Use plaster always (not too soft) and have impression tray large enough to include all of the teeth. Just before plaster sets in mouth, gently loosen it a trifle, then push up again and allow to harden. I have never had any difficulty in thus obtaining a good impression, and should a few pieces break off, they will be clean breaks, that can easily be replaced.

Take bite in usual way after cast is run, mark teeth to be extracted and carve them out on cast. If I am inserting six front teeth for example, I carve the three out on one side of mesial line, using the other as a guide for size, expression, etc.

In carving teeth out of cast, carve well up into cast, allowing artificial teeth to set up well under gum, fully one-quarter inch into socket.

being very careful not to change the form of the natural tooth at neck in carving cast.

When plate is finished, extract teeth from patient's mouth, being careful not to lacerate the gums, and after having used an antiseptic mouth wash thoroughly for a few moments, put plate into place, and you will have a most elegant piece of work, the teeth going right up into the sockets, and the gums coming down over them, as nearly like nature as is possible, and in many cases a vast improvement over nature.

I consider this method very advantageous, as none of the natural expression of the mouth is lost through patient going without teeth for a length of time, and I find that these plates are worn with comfort much longer than when a patient waits from two to six weeks before having plate, after teeth are out. Again, patients are so pleased to come into the office with old teeth in their mouths and go away with new ones. I have had numbers say to me, "Why, had I known that I need not go without teeth at all, I would have come long ago."

Advise the continued use of a good wash such as listerine, or Wam-pole's antiseptic solution, every day for a week or two, and also urge upon the patient the fact that the plate must not be removed except to cleanse.—A. JARVIS, in *Items*.

How to Make an Ideal Crown and Obtain Perfect Occlusion.

In the *Items of Interest*, Dr. Payne describes Dr. White's crowning method as follows:

"The system is ideal and perfection itself. It permits of an absolutely perfect occlusion, a perfect contour, and will without a doubt be used by every dentist who desires a perfect crown. The process is as follows: The operator fits a seamless copper band around the neck of the tooth or tooth root that is to be crowned and trims the said band to accommodate the cervical margin of the gum. You then cut out the lingual, labial or buccal sides of the band, as the case may be, leaving the approximal sides high. The approximal sides are then pushed to contact with the approximating teeth, if any. The band thus prepared gives you the exact circumference of the root, the exact shape of the cervical margin, and the bending of the sides gives you the approximal contour. You then take a wax bite. When cold, remove it—see that the band is in proper position on the tooth and take an impression in plaster. In all probability the band will come away with the impression, but if it does not, replace it in the impression. The impression is then poured and the cast articulated. You now have the relation of the band

to the occluding teeth, as it existed in the mouth. A ball of soft wax is placed in the band and the articulator closed. You now have the indentations of the occluding teeth in this wax. The surplus wax is trimmed up to the perfect contour of the tooth. You now have in this band and wax the form of a tooth which is perfect in occlusion because the indentations of the occluding teeth are marked in the wax, the contour is perfect because you have so shaped the wax, and the band gives you the exact shape of the cervical margin and the circumference of the root. Now, if what you have in this band and wax can be reproduced in gold, you have a crown that must be perfect in occlusion, perfect in contour, and perfect in fit. By the method originated by Dr. White, this reproduction in gold is possible, and this fact has been demonstrated by hundreds of practical tests within the short six months of its existence—and its existence has only been made known in this city. It has been enthusiastically received by the most competent members of the profession, and bids fair to revolutionize methods of making tooth crowns.

By the foregoing you will readily appreciate the fact that crowns can be made seamless, from a model, with as great a degree of accuracy as a vulcanite plate can be made to fit a cast.

I believe that this method will be the means of saving permanently, more teeth, especially molars, than any other practice of dentistry that exists today.

In bridge-work, if you have occasion to put in a bridge from an upper right cuspid to an upper second molar, and you wish the abutments, *i e.*, the cuspid and molar produced by this method, all that the operator has to do, is to fit the band as previously directed, and take an impression in plaster, and these two crowns will be produced so accurately that they fit into every indentation of these teeth. A wax bite is not necessary, because you want a copy of these teeth as they exist. If you choose to open the face of the cuspid, you have an ideal open-face cap, which is seamless and will hug the tooth tighter than it is possible to make an open-face crown by any other method. From the fact of these crowns being seamless, there is no liability of solder getting inside of your band. In fact, everything that is ideal and practicable in gold crowns seems to be found in this L. L. White seamless crown system. The crowns have their original temper, when finished, and are exceedingly dense.

Treatment of Sensitive Teeth.

Dr. E. Houghton, *British Journal*, says: "The cases that I bring before you tonight both refer to the same mouth, a gentleman about 60

with a fairly healthy mouth. The first case I treated in March, 1896. He came complaining of pain in the left upper molar. I found absorption had taken place. The pulp was quite healthy, and in drilling into the enamel I found the tooth was very sensitive. I treated it by fitting a gold plate carefully over the exposed fangs. I first took a model of the buccal surface and pared away the model at the neck of the tooth, so that the band would fit underneath the gum. Before cementing on the tooth I painted the portion beneath the gum with chloro-percha and fastened the plate with a pin and cemented it in the same way as I would cement a crown. I may say that this has been perfectly successful. Before I put the plate on, the patient could not bear either hot or cold water in his mouth. The success was immediate, and he has retained it in his mouth and the tooth is doing good service. The tooth was quite firm and has been so ever since.

The next case is slightly more complicated. In this tooth the symptoms are the same; there is sensitiveness to extreme heat or cold. This tooth was complicated by decay on the distal surface. I treated that by filling with artificial dentine; then fitted a band around the tooth—a split band—which I tightened up after putting in position, by means of a screw. That case has been perfectly successful. The patient said he had had no trouble since. In both these cases the teeth were doing good service. The patient did not wish to lose them, and I tried them as experiments."

A Poor Man's Crown.

A crown constructed of inexpensive materials and requiring comparatively little of the operator's time to prepare it for insertion. The materials of which the finished crown is composed are an ordinary rubber, plain tooth, German-silver wire hammered into any shape that the opening in the root requires, and the ordinary vulcanizing rubber of any color decided upon. The *modus operandi* is very simple. The root-canal being first prepared, a plain, rubber tooth is selected and ground to the gum. The end of the root is ground fairly smooth, but one peculiarity about the method is that, if the palatine or lingual portion of the root stands rather high and is fairly strong, it is not necessary to cut it to the gum, as for most other methods, it being possible to make the crown conform to any irregularity of the root. A piece of German-silver wire, of suitable size, is hammered on the anvil to the proper shape and fitted to the root-canal. The hammering gives additional stiffness, and makes the wire so rigid that there is no possibility of bending it with the ordinary force which comes upon a crown. One end of the German-silver is then

made jagged with the file and passed between the pins of the tooth, which are bent to hold it. Red, pink, or white vulcanizing rubber in small pieces is now packed upon the pins and over the wire with a warm instrument, and in sufficient quantity to form a shoulder which will cover the end of the root. This unfinished affair is then put into place, the pin going to its full extent into the root-canal, and the porcelain pressed to its proper position. Before it is put into place it is held over the spirit-lamp to soften the surface of the rubber, and the moistened thumb and finger will form the rubber by pressure accurately to the end of the root. It can be taken out, the surplus of soft rubber trimmed off, and put back again, half a dozen times, if necessary, within a few minutes, until everything seems right, when it is finally removed, invested in plaster in the flask, vulcanized and finished. There are many ideas which can be applied to this method. It has been suggested by Dr. Davenport that wax instead of rubber could be used for the first fitting, particularly when two or three root-pins were to be used, and after everything was adjusted the waxed crown could be placed in the flask, the flask opened, the wax taken out, and rubber packed in. Then, too, bicuspid can easily be formed and made quite slightly by the use of white rubber for the inner cusp. These crowns should be secured to place with zinc phosphate.—DR. S. E. DAVENPORT, *International*.

Thin Steel Matrices.

These little matrices are simple, delicate, easily made and applied, and, while doing their duty well, are so little offence to the patient that they may be—and should, for amalgam—left in place until the next sitting. The material is very thin steel. (I happen to find a very suitable sort in that which the women employ for the bottoms of their gowns.) After annealing slightly, cut it with scissors to the different sizes and general shapes of the approximal aspect of the tooth, pass a file around all its edges to smooth it for the tongue, and also to prevent any burred edges interfering with its slipping to place, punch a tiny hole near the buccal and lingual edges for convenience of removal, then place the strip on a piece of lead and strike with the hammer a small convex bead held upon it (I use a small, round-headed picture-nail, which I case-hardened and polished), thus stretching (not merely bending) the thin steel into a concave condition in every direction. It is quite easy to give in a moment just the convexity needed for the individual case, and it is sometimes of value, in irregularly placed teeth, to convex it more on one part of the approximal surface than another. The delicate strips will go into a very

thin space and hug the surface like a glove, being coaxed to their places with any large end pusher, and with a curving motion, presuming, of course, the surfaces to have received the usual polishing preparatory to filling.—DR. J. P. HODSON, *International*.

Extension Bridge Denounced.

A piece of bridge-work extending from one or two teeth on one side of the mouth, in a lateral position, and only supported by those teeth on one side, with the expectation that it will bear the force of mastication, is a form of bridgework that I have reason to denounce. In a very short time the teeth which maintain the bridge are loosened. Take a second bicuspid supporting such a bridge; if a molar is placed on a bridge extended from that tooth, in a short time the bicuspid will be thrown backward and loosened. And if a cap is put on the bicuspid in front of it, in a short time the occlusion of the jaws, coming a little closer on the molars, brings a force upon that tooth which is greater than the bridge was at first supposed to exert upon it, and the result is that the second bicuspid is forced backward and forward in its socket, and the first bicuspid is raised from out of its socket, and in some cases the usefulness of those teeth is destroyed.—GEO. EVANS, in *Items*.

How to Place a Contour Gold Filling on a Porcelain Face, Anterior Crown.

Frequently we have to crown centrals and laterals that once had large contour fillings; or, possibly, the teeth adjoining the one to be crowned have conspicuous fillings. A plain porcelain face in either case would be prominent for the want of a filling, and the distinguishing features of the crown may be very much disguised by a neat gold contour on one corner.

This may be accomplished without weakening the face at all.

After the face has been ground and fitted to the case, before backing it up remove it and bend a small piece of 24 k. 28-gauge pure gold around the labial and approximal side of the face, where the filling is to be. Now grind off the corner that is to make room for the filling, leaving it shaped on the labial side, just as you wish the filling, and bevel back towards the pins. Punch the holes in the backing, using the same gauge and karat gold as before. Burnish well against the back of the tooth and into the nook cut off of the corner. This will require frequent

annealing and careful work, but can be easily done. Next, trim the overhanging gold smooth with the labial side of the tooth where the corner has been cut off. Now place the piece of gold first bent over the corner of the tooth, before it was cut off in position, to work, where cut to form a joint with the backing at the labial surface. After the joint has been made between the backing and corner of gold, place them in position and secure with wax. You can now remove the porcelain face and the two pieces of gold held by the wax inserted. Flow 22k. solder over the backing at the point where the corner was cut off, thus uniting the two pieces of gold and making a solid gold filling.

A contour filling made in this way causes no strain on the porcelain face, but rather takes the pressure from it while in use.—R. R. J., in *Dental Weekly*.

Didactic Teaching.

I have been much interested in a paper on this subject by Dr. J. S. Marshall, read at the late meeting of the Southern Dental Society. In it he takes strong ground against didactic teaching in dental colleges. I most certainly agree with him, at least so far as the teaching of prosthetic dentistry is concerned, and can speak from personal knowledge, after seven years' experience in two dental colleges and seven years in a post-graduate school.

I have long claimed that prosthetic dentistry cannot be taught in the lecture-room. There must, of course, be a few lectures on general principles, but no amount of diagrams, models, etc., will give the student a correct, tangible idea of how *to do* the thing. Even in the laboratory the student labors under great disadvantage in being taught in classes, and especially large classes with but two or three demonstrators, and they often inexperienced men. In no place in the dental college is experience so much needed as in the laboratory.

With my seven years' experience in a postgraduate school, where *all* the instruction is given in the laboratory, in detail, step by step, and the student looked after to see that he follows instructions, one realizes that this is the only successful method of teaching this branch of dentistry. Often is the remark made, "I have learned more in one month than in the entire course in college." Of course I fully realize how difficult it would be to carry out this plan with the large classes in colleges; but if the experienced lecturer who, if capable of *doing* what he teaches, could spend a good part of his time *demonstrating* in the laboratory, instead of haranguing in the lecture-room, the student would learn far more, and less of his valuable time be wasted.—L. P. HASSELL, in *Amer. Dental Weekly*.

A Simple Method of Making Gold Retaining Bands to Take the Place of T Bands, or Where the Silk Ligature is Not Desirable.

The idea is to do away with the ugly effect of a gleaming mass of gold, which is unavoidable when the pressure is exerted from above. To make the appliance take a band of spring gold, about $\frac{1}{8}$ of an inch wide, and form it to the lingual surface of the teeth to be retained or regulated, forming a clasp hook at either end. After trying it in the mouth of the patient and finding that the band lies close and does not interfere with the inferior teeth, with a needle point mark the spaces between the teeth. At the points marked solder at right angles to the band strips of spring gold about $\frac{1}{8}$ of an inch in length. These are then divided and turned to right and left, forming hooks. The overlap of these hooks should not be more than $\frac{1}{8}$ of an inch. As the tooth comes into the true line, pressure may be increased or diminished to suit the case. The simplicity of making and exactness of this form of retaining band I hope may find favor in the eyes of our profession.—DR. W. BRYANT in *Stomatological Gazette*.

The Effect of Light on Tempered Metal.

Many practical mechanics do not know the bad effect of sunlight and moonlight upon edge tools. Knives, drills, scythes, sickles and saws assume a blue color if they are exposed for some time to the light and heat of the sun and the sharp edge disappears, and the tools are rendered useless until they are re-tempered. Retail dealers and peddlers, for show purposes, expose tools for days together to the light of the sun, and a tool from a good maker, in good temper and in good condition, becomes thus unserviceable. The bad condition of the tool is blamed to the maker, and attributed to bad material, or to inferior workmanship, when the fault lies entirely with the careless handling. Purchasers should be careful in selecting tools and avoid those which have been thus exposed, or which show the cast of color which comes from such exposure. Edge tools when not in use should be kept in a cool, dark place, to have them retain good temper and condition. The mark of the best maker cannot insure against loss of condition by your carelessness in this matter. Moonlight has also a similar prejudicial effect. Cross-cut saws can be put out of shape in a single night by exposure to the moonlight, and circular saws after a term of such exposure may need re-hammering to set them right, and will lose much of their temper. This applies to the temper and grades of steel to carry edges, but mild steels are not materially affected.—*Invention*.

Salivary Calculus in the Parotid Duct causing Symptoms simulating Alveolar Abscess.

Miss M., aged about 50 years, came to me "to have a tooth out." The left cheek was obviously swollen. The swelling had commenced three days previously. The cheek was both painful and tender, but the skin, although tense, was not reddened. The swelling was most prominent in the centre of the cheek. Pressure over the region of the left parotid caused pain. The patient was very nervous, and examination of the mouth in consequence somewhat difficult. The patient said the trouble "commenced with pain in the last tooth of the upper," viz., the left upper second molar. When that tooth was gently tapped she complained of pain, although it was apparently a sound tooth. She said it had been very painful in eating during the last three days. Careful examination, however, enabled me to assure myself that the swelling in cheek was not connected with either the upper or the lower jaw, and I noted a greyish appearance at the most prominent part of the swelling in the mucous surface of the cheek. At first I thought it was a commencing slough, but subsequently found it to be due to something white showing through the mucous membrane. With some difficulty I passed a probe into the parotid duct and was able to dislodge a small calculus—about the size of a one grain cocain tabloid and very much of that shape. I saw the patient again two days later, when the swelling had completely subsided, and the mouth "felt perfectly comfortable."—T. E. CONSTANT, *Jour. Brit. Asso.*

Setting Bridges.

I apply the dam where practicable and coat the pier teeth or roots with nitrate of silver. This may be done by direct application or by cataphoresis. There are three points of advantage in this method.

1st. If the tooth is a live tooth the sensitive condition is obviated, especially if the cement is slightly acid in reaction.

2d. An oxyphosphate cement will adhere to this surface more surely than to the tooth.

3d. In case any cement washes away at any time, or in case a band does not cover the root entirely the nitrate of silver coating protects it thoroughly.

I might add a fourth reason, and that is that the tooth would be in an aseptic condition and would have a tendency to render the cement so, but that is conjecture as I have never removed a bridge that has been set under these conditions.—A. JAMESON, *Review*.

A New Method of Polishing Vulcanite Plates.

Dr. J. A. Craig saturates the cone with chloroform and cuts the plate smooth with pumice. He then uses a soft cloth dipped in spirits of ammonia, rubbing the plate until the surface is hardened and the color restored, the chloroform having a slight bleaching action. Finally he secures his last finish with a very soft cone and soapstone. If the plate should be too thick in the first place he says that it may be rapidly cut down with the chloroform and pumice, and he believes that all who try his method will adopt it permanently.—*Items of Interest.*

BRIEFS.

Solder if flowed on a clasp will destroy its springing qualities.

Bleached Shellac.—It is said that bleached shellac will become worthless unless kept in water.

A Clasp Alloy is made of gold, with about two grains of platinum to the pennyweight.—*C. Buxton, Stom. Gazette.*

Making Paper Pellets.—A small bore gun-wad cutter may be used to cut bibulous paper into convenient size for cavity drying.—*Dental Weekly.*

Thorns for Filling Root Canals.—Dr. L. G. Noel advocates the use of sterilized thorns from the prickly pear, used in conjunction with chloro-percha, for filling root canals.

Silver Nitrate for Inflamed Mucous Surfaces.—Surely there is nothing better for many cases of inflamed mucous surfaces than our old remedy, silver nitrate.—*Dental Weekly.*

One Cause of Cracking of Gold Plates.—It is often caused by a change in the form of the mouth, subjecting certain parts of the plate to undue strain.—*C. Buxton, Stom. Gazette.*

Sponge Holder.—A Moffat syringe rubber bulb, split half through, makes a good holder or envelope for a piece of sponge for wetting corundum wheels.—*B. H. Teague, Dental Weekly.*

Copper Tack Pivot.—A copper carpet tack wrapped with annealed gold-foil makes a very good pivot, to which a flat-back plate-tooth may be soldered with 18 carat gold solder.—*B. H. Teague, Dental Weekly.*

Bridge Anchorage in Amalgam.—When the anchorage of a bridge is to be made in an amalgam filling, Dr. Register says oil the gold and it will have a tendency to prevent amalgamation.—*Dental Weekly.*

To Remove Oil of Cassia Stains from the Teeth.—Dr. O'Connor (*Stom. Gazette*) says that a solution of dehydrated turpentine, which can be obtained at the wholesale drug houses, will effectually remove the stain.

To Rid Rubber Dam of Odor.—Put the whole piece in water to soak ten or twelve hours, remove and wash it with clean soap-water, dry it by wiping, roll together, and place it back in the box for use.—*Dental Weekly*.

To Remove a Broken Broach.—A broken nerve broach can easily be removed from a root-canal with a 25 per cent. solution of pyrozone placed on a little cotton and left in the canal for a few days.—*S. L. Walton, Stom. Gazette*.

One Who Takes No Interest, or a merely perfunctory interest, in the efforts made to elevate the social and moral tone of the profession, is indirectly an abettor of those who are busy dragging it through the mire.—*Dominion Journal*.

Wood Alcohol.—Wood alcohol is much cheaper than grain alcohol, but when used for annealing gold the latter should be placed on mica and held over the flame, as the latter deposits soot on gold if passed through it.—*Dental Weekly*.

Packing Pink and Red Rubber.—In packing a flask with both pink and red rubber, have the red rubber so that it will easily flow over the pink into the vents and it will seldom "show through" the pink when the rim is polished.—*B. H. Teague, Dental Weekly*.

Capping Teeth with Live Pulps.—When the cap extends beneath the gingival margin between the bicuspid and molars is the place where most trouble is located. We do not hesitate to place a cap on a living tooth at times, but as a general practice we think it is not best.—*Dental Review*.

Impression for Crown.—In taking an impression of a tooth for a cap crown, if a tooth is on either side, a matrix should be first fitted between them in the approximal space and replaced in the impression afterwards, before pouring in plaster or fusible metal.—*B. H. Teague, Dental Weekly*.

Cause of Dry Sockets.—I attribute the cause of dry sockets (non-healing after tooth extraction), to the non-absorption of the alveoli, and believe that this can be avoided if the thin process is taken out after extraction, when healing of the gums will more rapidly result.—*T. M. Jamison, Items*.

An Emergency Impression Cup.—To make a good impression cup for a crown or small bridge, Dr. W. A. Blassingame takes an ordinary tin teaspoon, which can be had for a few cents apiece, bends up the edges with a pair of pliers, and gets a cup that answers every purpose.—*Amer. Dental Weekly.*

Caution in Bleaching Teeth with Pyrozone.—I want to add a word of caution: do not carry the bleaching too far. I bleached a lateral incisor for a young lady of about eighteen. When I finished the tooth was actually whiter than its neighbors, and was so the last time I saw her.—*C. L. Goddard in Stom. Gazette.*

A Method of Making and Attaching Clasps.—Obtain impression of mouth with plate in position; obtain from this a model; select the one or more teeth you propose to clasp, fit the clasp tightly to tooth, attach clasp to base-plate; remove from model, invest, trim investment, dry thoroughly and solder.—*C. Boston, Stom. Gazette.*

How to Color Porcelain Inlays so that they Match the Teeth.—After the inlay has been fitted and ground so as to be nearly as thin as it must be, after the final polish, try it in, and any defects in the color may be corrected or modified by coloring the bottom or reverse side with water-colors or some suitable coloring matter.—*Dental Weekly.*

Investment for a Tooth.—For quick soldering, wrap the tooth to be soldered well with asbestos cloth, cutting out the wrapping just where the solder is to flow. Make a pit in the soldering block, into which place the wrapped tooth and pack asbestos fiber around it. This investment is as efficient and safe as one of plaster and sand.—*Amer. Dental Weekly.*

Keep a Record.—Books or charts should be kept of the work done for our patients, not only for their advantage but for our own. They assist us in making a diagnosis; they acquaint us with the comparative value of fillings, and they sometimes inform us with joy that the "filling which has come out" was inserted by some other hand.—*Brit. Journal.*

To Remove Pulp Remnants.—A small crystal of cocain, carried on the point of a smooth nerve explorer that has been moistened in pure water, to the offending member, will deaden it sufficiently to allow its extraction with very little pain. A perfectly new broach, much smaller than the canal, facilitates the operation very much.—*H. R. J. in Dental Weekly.*

Transillumination not Infallible as a Diagnostic Means in Diseases of the Maxillary and Frontal Sinuses.—Where a diagnosis has been definitely made, transillumination may uphold it; without absolute proof of the presence of certain morbid processes, conclusions

based upon its results should not be considered infallible.—*N. Y. Med. Journal.*

Cause of Failure in Crown and Bridge-Work.—It may be said that the prolific cause of failure in crown-work may be embodied in the phrase, "a band badly adjusted." In bridge-work, in addition to inaccurate band adjustment, add unnatural rigidity, excessive work for each individual root, and increased opportunity for impaction of food.—*Jos. Head, Items.*

Keep Hypodermic Needles Aseptic.—In hypodermic injections nothing is more important than to have the needle aseptic. An easy way to clean it of micro-organisms is to put the needle in an iron spoon filled with water and hold it over a spirit lamp or other flame until the water boils. Do this after each case. Very little time is required.—*D. D. A., in Dental Weekly.*

How to be Successful.—A dentist, to be a successful man, must not only be a conscientious and careful man, but he must confine himself to his profession. Our profession demands our whole strength, and all our time; and a dentist who attempts to run a drug-store, or indulge in speculation, or has his mind on baseball or dances, the chances are against his success.—*J. M. Whitney, Stom. Gazette.*

Contentment and Cheerfulness.—When a man denies himself sleep, food, and the exercise work gives both to brain and body he is robbing his life of its full term. Let him be cheerful also, for the body is like an engine—it will run well and long if it is well oiled. Contentment and cheerfulness are the oil which keeps the nerves from wearing out.—*Family Doctor.*

Arsenious Acid Pure for Pulp Devitalizing.—Pure arsenious acid is the most convenient and safest form in which to use arsenic for devitalizing the pulps of teeth. In this form the arsenic is insoluble in water or the fluids of the mouth, or at least very nearly so, making it less liable to leak out of the cavity and get on the surrounding gum tissue.—*H. P. J. in Dental Weekly.*

An Application for Fissures of the Tongue.—This formula is from the *Monatshifte for praktische Dermatologie*:

R	Carbolic acid	-	-	-	-	-	3 parts;
	Tincture of iodin	-	-	-	-	-	10 "
	Glycerin	-	-	-	-	-	30 "

M. For smearing the fissures.

Formaldehyde in the Treatment of Burns.—The *Pharmaceutische Post* states that formaldehyde gives excellent results in the treat-

ment of burns. Compresses soaked in a ten-per-cent. solution are applied. It is said that in twenty minutes all the pain ceases, and that continued renewals of the application cause all trace of the burn to disappear, so that the slightest redness of the skin is left.

The Action of Nitrous Oxid.—Nitrous oxid, according to Dr. Waller, has little or no action on nerve tissue. Carbon dioxid, he finds, is a powerful agent to produce immobilization, and the presence of carbon dioxid favors anesthesia and lessens its risk. This, the writer remarks, is a fact of extreme interest, because, unless it is carefully explained, it is liable to a fatal misunderstanding.

How to Manipulate Impressions without Oiling.—The impression must be varnished before it is thoroughly dry, and after varnishing it should always be thoroughly soaked in water just before pouring the cast, but never oiled. Oil has no business on an impression.

This obviates all danger from bubbles, and insures a smooth, glazed surface on the mold.—*D. D. A. in Dental Weekly.*

How to Tighten a Loose Cord.—I noticed that on damp, rainy days, the cord of my engine was tighter than on dry days. About a week ago the cord became so loose that when I applied pressure to the bur it would stop revolving, and the cord would slip around on the wheel. I took a wet sponge and held it to the cord till it was saturated, when I found that the cord had so shrunk as to be quite tight.—*W. D. Knight, Dom. Journal.*

Aseptic Dentistry.—Use as a wash for the hands before and after each dental operation, Steifel's trikresol soaps (5 and 10 per cent.), and trikresol in solution as a sterilizer for dental instruments (the plating or polish of which will not be injured in the least by its use). Many other dental uses can be found for trikresol, as it will take the place of and is superior to carbolic acid, creolin, cresol, or bichlorid of mercury solutions, etc.—*C. C. Stanley in Dental Weekly.*

Burs to be Used in Cavity Preparation.—For direct penetration, the best instrument is a drill. For shallow penetration, say from one to two millimeters, the next best is a round cone, and the poorest is an inverted cone. It follows, then, that the least painful way to prepare axial angles is to first cut at the desired angle and depth with a spear-shaped drill, after which a bur can be inserted into the bottom of this hole made by the drill and lateral or drawing cuts made.—*L. P. Leonard, Stom. Gazette.*

Formalin Not a Preserver of Dead Pulp.—In the use of formalin for preserving a dead pulp, we have found it useless for a long time,

i. e., it will preserve it for forty or fifty days. When one-half of the pulp has been removed the remainder will rest quietly for about three months, then it will begin to lose its potency. Formalin is soluble in water and we explain its non-preservative properties to that fact. We think you will do well to remove the pulp from the roots as formerly and not depend on mummifying it.—*Dental Review*.

Bad Habits.—There is the habit of indifference that impresses our patients unfavorably, a habit that grows to carelessness in not keeping our offices tidy and attractive, and ourselves neat and pleasing. I have seen patients look askance at the soiled napkin covering the head-rest of the operating chair, and before they would place their head on the rest have removed the napkin when the doctor's back was turned and thrown it into a corner, while he was oblivious of the bad impression his thoughtlessness had caused.—*F. C. Payne, Stom. Gazette*.

Treatment of Instrument Wounds.—If during an operation you should accidentally wound yourself by the prick of a needle or retractor or the scratch of a knife, you should at once encourage bleeding and then touch the spot with strong acetic acid. It burns rather smartly for a few moments, but the resulting scab will be soft and pliable and not easily torn off. Never cover such a wound with collodion before disinfecting it thoroughly, and do not neglect your precautions in any case, no matter how far beyond reproach may be the moral character of your patient.—*Pacific Record*.

Periodontitis from Illy-Constructed Bridge-Work.—Last winter I saw a patient suffering from periodontitis around the abutments of a bridge. All remedies failing, the bridge was removed. The two abutments were found to be so loose as to render it most improbable that they could ever be of service. After a rest of two months under normal conditions they became healthy and firm. Crowns were placed upon them, a removable bridge made, allowing perfect individual motion of the supports, and the patient, up to this time, has been masticating in comfort.—*Jos. Head, in Items*.

Retaining Appliance.—A simple, easy and accurate method of making a stay appliance for holding two or three teeth that have been moved by regulation appliance, is to take an impression in modelling composition and run a model with Teague's impression material; then take very thin platinum, and, after annealing it, with a flat burnisher, adapt it well to the teeth. Next, trim up the platinum where you wish it to come, and while still on the model flow solder over the entire outer surface as thick as desired. After polishing you have a neat, close fitting appliance.—*H. J. R. in Dental Weekly*.

Criticism of Dental Educational Methods.—Much of the criticism of our dental educational methods is of the destructive sort by those who, while condemning the method and its result, offer no suggestions for their improvement, or, still worse, demand reforms utterly impossible in view of the conditions to be met. What is needed, and what will be gladly welcomed by all honest educators in dentistry, are suggestions which can be practically utilized for the improvement of our system. Criticism of the constructive type always commands respectful consideration and is generally received.—*Editorial in Cosmos.*

Perspiration Poisonous.—The toxic properties of perspiration have been made the subject of a communication to the Paris Academy of Sciences by Professor Arloing. The moisture extracted from the shirt of a market gardener, and from the glove of a lady, heated by dancing, produced alike severe symptoms of poisoning when injected into a rabbit. He also discovered that the perspiration caused by active exercise was much more toxic than that eliminated by the Turkish bath. M. Berthelot, in course of the discussion which ensued upon the paper, stated that the ancients employed the sweat of horses for poisoning their arrows.—*Amer. Druggist.*

Proper Method of Cleaning Teeth.—Have patients clean the teeth with a powder as follows: Precipitated chalk, 4 parts; magnesia, 2 parts; pulv. orris root, 2 parts; boric acid, 2 parts; sweetened with saccharine and flavored to suit. (The patient can make this at home). After cleansing, rinse the mouth with a one per cent. formalin sol., which I advise them to use in place of water, when cleansing the teeth. A piece of absorbent cotton is then saturated with 3 % pyrozone and rubbed with the finger in between the teeth for a minute. After using the pyrozone, do not rinse out the mouth with water. This holds good for any mouth-wash.—*A. C. Hart, Items.*

How to Make Insulating Tubes for Cataphoresis.—Take a straight wire, $\frac{1}{8}$ inch in diameter and one foot in length, cut a strip of rubber dam half as long, which, when one end is caught upon one end of wire and held until the end is drawn over the other end of wire, the rubber will have an overlapping edge of one-sixteenth of an inch; sand-paper as in repairing a puncture, and apply some rubber cement to edges; lay away until properly united, or until it is dry enough to hold; clip one end and the tube will come off. Cut a section of this and slip over the tooth, and urge down under gum if you have buccal cavities. Tube may be held off from the cavity or tooth, at any point, by a pellet of cotton containing the medicament.—*W. H. Richards, Dental Weekly.*

A Warning.—In speaking of the dangerous properties of aconit and iodine a contributor (*Dom. Journal*) says:

It is better to repeat the painting of the part by small quantities, than to saturate the gums to such an extent that the throat and alimentary tract are irritated, and the stomach disturbed. A young practitioner applied a large swab of cotton, dipped in the mixture, to one side of an affected tooth with very nearly serious results. In one case the entire mucous membrane of the mouth, throat and tongue was discolored by the excessive quantity used. In another case there were all the symptoms of aconit poisoning, and for several days the patient was under the care of a physician. In the use of poisons in dental *materia medica*, it is wiser to do too little than too much.

A Method of Preventing Caries.—To stop decay recurring at the margin of the gums, or around your fillings, dry very carefully, then apply twenty-five per cent. pyrozone for about three minutes to thoroughly cleanse. Now apply formalin sol. forty per cent. full strength, continuing this for five minutes; then dry thoroughly and melt paraffin and salol over the surface, endeavoring to have the partly decalcified tooth substance take up the paraffin and salol. If you are filling a tooth, have your cavity prepared. Harden with formalin (forty per cent.) for five minutes, then dry and coat with varnish of Canada balsam, containing two per cent. of formalin. If it be an amalgam filling, burnish your amalgam into this sticky lining. Proceed similarly with gold and gutta-percha fillings.—*A. C. Hart, in Items.*

Salicylate of Soda for Toothache.—Of all medical remedies for toothache I know of none which is so successful as salicylate of sodium. I believe it is especially useful in those cases where the pain is started "by taking cold." Even in the condition which is called by dentists "periostitis," where the carious tooth becomes slightly loosened and projects beyond its neighbors, and is exquisitely tender when eating is attempted, I have often known sodium salicylate to be completely and permanently successful. A dose of gr. xv. will usually relieve the pain very promptly, and if this is repeated every four hours the inflammation may entirely subside, leaving, of course, a carious tooth to be disposed of according to circumstances. The addition of belladonna is often advantageous.—*F. C. Coley, in Med. Practitioner.*

Restoration of Gum Tissue.—I have found in trying to restore gum tissue, where it was uniformly wasted away around the necks of teeth, that if we take a tolerably stout silk thread and wax it well, and tie it firmly around the teeth, leave it there, it will cause a degree of

irritation that will have the gum tissue come up and go beyond the ligature, so that by watching it carefully, keeping the mouth clean, we will be able to produce uniformly a pretty good margin of gum and afterward care for it antiseptically after the ligature is taken off, and we will find in some of those "symmetrical wastings" that the necks will be very well covered. In other cases I have found that by loosening the gum tissue around the surfaces of the root and making transverse cuts in the gums at regular intervals I could force it down.—A. W. Harlan, *Dental Review*.

Eruption of Right Upper Central Incisor through the Lip Late in Life.—The patient was a lady, age 60 years. The retained and misplaced tooth, after being impacted in the jaw for about fifty years without betraying its existence through any symptoms or troubles, when the neighboring teeth, whose roots to a certain extent stood in its way and prevented its eruption had disappeared, emerged with its cutting edge from the atrophied alveolar process, according to its abnormal horizontal position in the jaw, and passed directly into the transition-fold between the gum and the upper lip. In its further course, in consequence of the continuous pressure, it gradually bored through the mucous membrane of the lip, and its muscular apparatus, which impeded its complete eruption, and finally the tooth penetrated the skin; the lip being completely pierced. Tooth was extracted.—*Monatschrift für Zahnheilkunde*.

New Publications.

AN EPITOME OF THE HISTORY OF MEDICINE. By Roswell Park, A.M., M.D., Professor of Surgery in the Medical Department of the University of Buffalo, etc. Illustrated with portraits and other engravings. One volume, pages 348. Extra cloth, beveled edges, \$2.00 net. The F. A. Davis Co., publishers, 1914 and 1916 Cherry Street, Philadelphia.

In this book the author has attempted to bring the most important facts and events comprised within the history of medicine into the compass of a medical curriculum, and, at the same time, to rehearse them in such a manner that the book may be useful and acceptable to physicians and laymen. The author has indicated the relationship which has ever existed between medicine, philosophy, natural science, theology, and even belles lettres. The author says: "The history of medicine is really a history

of human error and of human discovery. During the past two thousand years it is hard to say which has prevailed. Notwithstanding, had it not been for the latter the total of the former would have been vastly greater. A large part of my effort has been devoted to considering the causes which conspired to prevent the more rapid development of our art, etc." The book also contains a brief sketch of dentistry, covering eleven pages. Altogether it is a valuable compilation of facts presented in such a manner as to interest and instruct anyone who is interested in the subject.

SOCIETIES.

Ohio State Dental Society.

THE following officers were elected for 1898 :

President, Grant Molyneaux, Cincinnati; 1st Vice President, L. L. Barber, Toledo; 2d Vice President, H. F. Harvey, Cleveland; Secretary, L. P. Bethel, Kent; Treasurer, C. I. Keely, Hamilton.

BOARD OF DIRECTORS 3 years, F. A. Hunter, W. H. Todd, H. L. Ambler, J. Taft.

EXECUTIVE COMMITTEE—H. T. Smith, J. R. Callahan, H. B. Bartilson, A. F. Emminger.

COMMITTEE OF ARRANGEMENTS—W. H. Todd.

CLINIC COMMITTEE—P. S. Bollinger, L. E. Custer, W. H. Todd, S. D. Ruggles.

PUBLICATION COMMITTEE—L. P. Bethel, J. Taft, Henry Barnes.

MEMBERSHIP COMMITTEE—W. H. Hersh, Chas. Welch, A. T. Whiteside.

New members elected were as follows : W. D. Long, Dayton; J. K. Douglas, Sandusky; H. E. Smith, Urbana; J. F. O'Brien, N. Baltimore; A. M. Harrison, Columbus; W. H. Merritt, Norwalk; S. L. Dunlap, Chillicothe; J. W. Hisey, Cleveland; C. L. Slutter, Alliance; J. G. Wherry, Elyria; W. A. King, Marysville; B. Q. Ayres, Up. Sandusky; T. T. Brand, Jr., Urbana; R. F. Jordon, Up. Sandusky; M. C. Steeves, Marion; J. E. Boyd, Cincinnati; J. B. Beauman, Columbus; E. C. Beggs, Mt. Vernon; L. T. Canfield, Toledo; C. W. Mills, Chillicothe.

Resolutions Adopted by The Ohio State Dental Society.

D. R. JENNINGS.

IN memory of Dr. D. R. Jennings, who died in Cleveland, O., Oct. 29, 1897.

WHEREAS, It has pleased an all wise Providence to remove from among us, our professional friend and brother; therefore be it

Resolved, That we the members of this society deeply regret his loss.

Resolved, That these resolutions be spread upon the minutes and the secretary requested to forward a copy to his bereaved family, with whom we fully sympathize.

E. C. SLOAN.

The committee on Necrology of the Ohio State Dental Society report the following resolution on his death:

WHEREAS, Death has removed from our membership Dr. E. C. Sloan of Ironton; and

WHEREAS, On account of his high character and his ability as a dentist, we realize the loss to the profession in his death; therefore be it

Resolved, That we tender his family our sympathy; and be it further

Resolved, That a copy of these resolutions be spread upon the minutes of the association, also published in the dental journals.

E. P. EDDY.

This society is called upon to mourn the sudden departure of one of its highly esteemed members in the person of E. P. Eddy, of Marietta; therefore be it

Resolved, That in the death of our esteemed brother, we have sustained the loss of a gentleman of high character and integrity.

Resolved, That the foregoing be spread upon the minutes and a copy forwarded to his family condoling with them in their affliction.

H. L. AMBLER,

OTTO ARNOLD,

L. L. BARBER,

Committee.

THE OHIO DENTAL JOURNAL.

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No. 2.

CONTRIBUTIONS.

The Preparation of Compound Cavities in Anterior Teeth.*

BY S. D. RUGGLES, D.D.S., PORTSMOUTH, O.

THE cavities to which reference is made in this paper are those of the upper incisors, in which the mesio-incisal or disto-incisal angles have either been destroyed or decay on the proximate surfaces has extended toward the incisal edge, until the enamel is deprived of strength sufficient to withstand the force of mastication. (Fig. 1, A.)

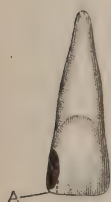


Fig. 1.

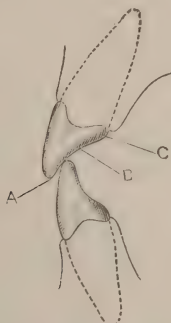


Fig. 2.

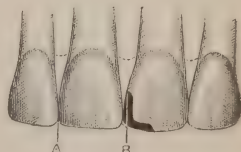


Fig. 3.

Before entering upon a description of their preparation, it will be well to consider for a moment the points of proximate contact and the occlusion.

* Read before the Ohio State Dental Society, December, 1897.

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In a normal occlusion the incisal edges of the lower incisors may be in contact with the lingual surfaces of the upper incisors, anywhere from the incisal edges to a point midway between them and the linguo-gingival ridges, or cingula (Fig. 2, A. In the best-formed arches the interdental spaces extend to points on the proximate surfaces which lie near the incisal edges (Fig. 3, A.) The necessity of the preservation of these interdental spaces and points of proximate contact has been urged repeatedly in recent literature, particularly in the writings of Dr. G. V. Black, until detail on the point is unnecessary.

The distribution of force upon the anterior teeth is not the same as upon either the bicusps or molars. By this is meant that the entire force exerted in the act of biting is not transmitted



Fig. 4.

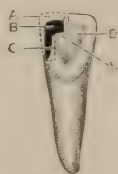


Fig. 5.



Fig. 6.

in a line with the apex, but is distributed to a greater extent along the labial surfaces of the roots in their movements upward and backward, as seen in Fig. 2; the long axis of the root is not in a direct line with the force exerted. The crown of the typical incisor has an inclination of about ten or twelve degrees from the long axis of the root, and is in line with the force exerted. This fact should be taken as the principle for the preparation of these cavities. In these cavities, as in all other step or compound cavities, the object is, if possible, to have the base of the filling equal as nearly as possible, the surface exposed to mastication. As an illustration, let the superior left central incisor whose mesio-incisal angle is destroyed, be taken. The dam adjusted and sufficient space in which to work obtained, and all decay removed, it now becomes necessary to determine to what extent the gold must be carried over the incisal edge mesio-distally (Fig. 6, C.) This will depend upon the extent of the decay on the lingual surface. The cavity must be extended into healthy tissue, and to such an extent as to insure a sound base for filling. The depth of the step into the labial plate of enamel (Fig. 5, A), or the thickness of the gold

for the protection of this plate, will depend upon the occlusion. If it be normal the fortieth of an inch will be sufficient, but in case the occlusion should be end to end with the lower incisors it must be made deeper and the body of gold heavier to withstand the extra stress.

The first step is made with a square-edged carborundum wheel, one that is fine enough to prevent chipping of the enamel. Care should be taken to keep the step as nearly parallel as possible with the original or subsequent contour of the incisal edge, as this insures an equal distribution of the stresses; otherwise the body of gold on this surface will only be as strong as its thinnest point (Fig. 6, B).

It is now necessary to remove a portion of the lingual plate of the enamel to form the lingual step (Fig. 5, B). This is done with a drill and chisel, or better, with a sharp inverted cone in the engine. The extent of this step also depends upon the extent of the decay, but a firm base in healthy dentin is necessary (Fig. 4, D). The floor is formed at a right angle to a line extending from the incisal edge to the junction of the enamel and cementum on the labial surface, which line is approximately the long axis of the crown; and mesio distally it should be parallel with the incisal edge (Fig. 5, D).

In preparing this step care should be taken that the labial plate of enamel be not robbed of all its dentin support, else the gold will become visible through this plate. If possible, a slight flat-bottom groove should be made in the dentin at this point for additional retention (Fig. 4, A). All overhanging enamel on the labial and lingual surfaces unsupported by dentin is removed sufficiently to insure self-cleansing margins, and the gingival margin is extended far enough beyond the point of proximate contact to insure its cleanliness (Fig. 3, B). A flat seat is now made in the dentin at the gingival portion of the cavity (Fig. 4, C), at right angles to the axial wall (Fig. 5, C), extended labially and lingually as the case permits, making at the same time undercuts in the dentin, as shown in Fig. 4 B and E.

A flat-bottom retaining-pit is now made in the labial and lingual extremities of the gingival base, diverging from each other (Fig. 4, F); also one in the lingual step, at the junction of the pulpal and axial walls (Fig. 5, E). All retaining-pits should be made in dentin. In preparing the margins a thin, sharp, flex-

ible chisel should be used, giving them a bevel of fifteen or twenty degrees, care being taken to obliterate all sharp angles, as curves are much more pleasing to the eye.

DISCUSSION.

DR. C. R. BUTLER, Cleveland, said that he was struck with the evident care and study given by the author in the preparation of the paper. All questions have two phases, the ideal and the practical. It is well to have high ideals, for then the results of our efforts are likely to be more satisfactory and complete. Unless an artist has a perfect ideal of what his picture or the piece of sculpture which he is essaying should be, his hand, no matter how cunning and skillful, will never be able to produce a fine and worthy production.

As dentists we know there are no two cases of just the same arrangement of the teeth, either in form or structure. The ideal treatment of compound cavities in anterior teeth will depend largely upon the state of the remaining teeth. We must remember that the force brought against the filling, if direct, is very liable to dislodge it. The author says the gold must be one fortieth of an inch in thickness, but even if it were one-tenth or one eighth of an inch thick the occlusal force of the antagonizing teeth, if acting directly on the filling, will stretch the gold and loosen it. The aggregate force exerted by the jaws in mastication during twenty four hours will reach over two tons, enough to stretch almost any substance. No matter what anchorage you have, the force will be applied just at the distal corner of the gold. The author mentions the need of different procedure if the teeth are regular or irregular; in irregular teeth undue force is brought to bear upon particular portions of the cutting edge. Some of the worst cavities we have to repair are in these irregular teeth, where you cannot get at them properly. It is advisable to save as much of the tooth substance as possible, as the natural edge will not stretch under the force of use as even as a gold edge will. It is often better to sacrifice the esthetic appearance to durability.

There can be no successful practice based upon arbitrary rules and formulas, but a rule must be made for each individual case. A high ideal and carefully thought out theory of how to treat the cases in the best manner will, however, be a great help;

but each operation will have to be adapted to the necessities of the case, always remembering that strength of the operation and durability are all-important aims.

DR. J. B. BEAUMAN, Columbus, said he had been doing this class of work for forty years. At a convention held at White Sulphur Springs Dr. Atkinson filled a tooth, using the same method, and that was where he got the idea. In the case of a central tooth, when the cavity does not extend quite to the cutting edge, the corner of the tooth must be cut away, as the gold filling is stronger than the thin shell of the enamel would be if left to bear the strain.

DR. RUGGLES said in closing that he made the drawings from teeth illustrating exactly the course of the work, also that a few words on the finishing would be of service. We have in this filling three stresses to guard against, crushing, shearing, and tipping. These stresses are all well met in the mechanical principles upon which the filling was inserted, but can be helped additionally by observing a few points in the final finishing. There is a natural desire and tendency to restore exactly the original outline of the tooth, but this is often done to one's sorrow, whereas, if we so shape the filling that there is a general tendency for the food to glide off in all directions and offer as little resistance as possible we will be more successful. This is well illustrated in Fig. 6. The mesio-incisal angle (Fig. 6, A) is not built down to the original contour, but is very little shorter than that part in the central lobe of the tooth (Fig. 6, C), thus offering an inclined plane and allowing the food to glide off more readily. Although the inclination is hardly perceptible it is of the utmost importance. It would be better to sacrifice a little in the outline in this case than to build down and increase the chances of displacement.

A Method of Treatment to Promote the Utility of Pulpless Teeth.*

BY W. T. McLEAN, D.D.S., CINCINNATI, O.

THIS is one of the various important pathological conditions in which every dentist is more or less interested, owing no doubt

* Read before the Ohio State Dental Society, December, 1897.

to the fact that there are so many necrotic pulps found in the mouths of patients who present themselves to dentists for relief and treatment. It is a pleasure for me upon this occasion to present to the members of this society a method of treatment which has been productive of satisfactory results in my practice. It is well understood that the tooth receives its principal nourishment from the pulp, and if it were not necessary for its preservation there no doubt would have been a natural factor to eliminate it. It is known that after the age of twenty-five there is an improved calcific change occurring in the structure of the tooth, and this improvement is greatly lessened when the pulp is destroyed. Owing to the fact that there is organic and inorganic matter which enter into the formation and substance of a tooth, they are equally essential for its maintenance. I divide pulpless teeth into two major classes, viz.: the medico-surgical and the septo carious. The first class are those where the pulp is found exposed, vital or partially so, and the second class are those where the pulp has become devitalized by septic and carious encroachment. In the first class the treatment is not complicated and the prognosis is good. In the second class there is invariably a septic condition present at the apices of the roots and frequently a necrotic condition of the pericementum, and possibly a disintegration of the alveolar process, the result of necrosis. In this class the prognosis is only fair. I never attempt to treat a pulpless tooth upon which I cannot apply the rubber-dam; to my mind this is imperative; after its accomplishment I obtain direct access to the cavity and canals of the tooth to be treated, never fearing the sacrifice of enamel and dentin sufficiently to that end. In the first class the removal of the vital pulp is painless accomplished by the chlorid of ethyl spray (Bengue), which is supplied by Leeming & Co., New York. This spray requires about ten minutes' time; after the removal of the pulp, which is done with a stiff barbed broach, the tooth is permitted to return to its previous condition; after which the thorough cleansing and dehydration of the dentin surrounding the canal is accomplished. The canal is well wiped with Ceylon oil of cinnamon and hot air blown into it for a few minutes; the heat vaporizes the medicament and causes it to permeate the dentin slightly, and renders the canals and apical space sufficiently aseptic to prevent sepsis. The canals are now filled with powdered asbestos made into a thin paste with a fifty per cent. solution of silver nitrate; this paste is pumped into the canals by

using a plain broach upon which is wrapped a few fibers of cotton, and completely filled. Harvard cement is used to protect the contents of canals. The tooth thus treated is given forty eight to ninety-six hours to become accustomed to its changed condition, after which filling, crowning, or preparation for bridge abutment may be accomplished with propriety.

In the second class the operative procedure differs, inasmuch as complete asepsis is more difficult to obtain, and a correct diagnosis cannot be made as the degree of the pathological condition cannot with exactness be ascertained. We find in this variety foreign matter, pus, and possibly necrosis of the alveolus. The treatment is as follows: The rubber-dam is applied, the cavity and canals are opened, free access is obtained with aseptic instruments, and hot water is injected into canals by a hypodermic syringe until all loosened *débris* is removed. Next pyrozone is injected; if pus be present it will be forced out; a few injections will suffice. Bibulous paper placed conveniently will catch and absorb the overflow of medicament, and prevent soiling of the patient's clothing. The canal is next dehydrated with Evans's root dryer, and cotton saturated with oil of cinnamon loosely placed and retained in place with gutta-percha stopping. The patient is dismissed with instructions to return in forty-eight hours. The treatment is continued for three or four sittings, depending upon the severity of the case and the recuperative power of the patient, allowing the same length of time between each treatment. When a fistulous opening is present and the exudation of pus is noticeable, I bur through this opening and endeavor to reach the apical space and inject pyrozone through the canals and have it traverse the fistulous tract. The object is to mechanically and aseptically cleanse it. I next partially dry this tract, and with the hypodermic syringe inject oil of cinnamon so that it oozes from the gum-opening. This is continued until pus formation, fetid odor, and sensitiveness are eradicated. The completion is the same as the first class, using my judgment in performing the most desirable permanent operation.

DISCUSSION.

DR. J. TAFT, Cincinnati, said the subject of the paper was an important one, because exposure of pulps and the death of pulps are so frequent that it is desirable that all dentists should have a clear knowledge of the best way to treat the cases when they are

found in his practice. No one has practiced long without meeting many cases of pulpless teeth, and those having exposed but still living pulps. Proper treatment will often result in a prolonged retention of pulpless teeth, making them serviceable organs. There is a great variety of treatment both of pulpless teeth and those having exposed pulps. The paper gives the impression that all exposed pulps should be destroyed, but he thought the retention of the pulp, when at all possible, was very important, as the dentin is living matter and its continued life depends upon the preservation of the pulp. When this is destroyed the dentin becomes a dead tissue. The paper is so worded as to leave us to understand that when the pulp is dead the nutrition of the tooth is diminished, but in a great proportion of cases the nutrition of the dentin is absolutely cut off on the death of the pulp.

In the great majority of cases, when the pulp is recently exposed and only a small orifice, its vitality can be preserved. I know many think that all exposed pulps should be destroyed. The feeling is that to take it away makes an end of the trouble, but does it end it? Is it not true that pericementitis and alveolar abscess will often follow destruction of the pulp?

When the pulp must be destroyed the course recommended by the paper is much better than to poison the pulp by the use of arsenious acid. This is often the cause of trouble afterward; sometimes the trouble follows quickly; sometimes it appears long afterward. This can be demonstrated by any one who carefully notes the results. There are many ways of removing pulps without pain; by the use of cocain, for instance, in crystals or in solutions applied to the pulp; or it may be injected into the pulp, which may then be removed. Cataphoresis also will anesthetize it in almost every case, so that the pulp may be removed with as little pain as you would remove a shred of gum tissue from the margin of the gum. While the dentists have these agents at their command, it is almost, if not, criminal for them to use so dangerous a method as poisoning it with arsenious acid.

The paper did not make any reference to the variety of conditions found in pulpless teeth. Sometimes the pulp is found to have been mummified by natural processes; there is no odor, nothing left but merely the skeleton of the pulp. Other times the pulp is in a more or less decomposed condition; or it may be without odor but still be an active irritant on the tissues beyond the apex of the root. More frequently the state of the tooth is one of

very foul odor, and the tissues beyond are suffering acutely. If a pulp is mummified and dried up it may be removed with scarcely any antiseptic treatment, but measures to make the canal aseptic become necessary when there is any odor of decomposition. In some cases the pulp may be very offensive and still make no impress on the tissues beyond; sometimes because the apex is so closed that there is no communication, or it may be that the system is so vigorously healthy that the effect is overcome by Nature's methods of disposing of irritants. The latter cases are very favorable, as when the pulp is removed you need dread no after effects. In many cases probably antiseptic treatment is not necessary, but still it is always advisable. Of the vast variety of antiseptics employed, most are efficient. Sulfuric acid is good; silver nitrate is also efficient, but some others are just as good and will not discolor the tooth as silver nitrate will. Mixing with asbestos is a new idea, though the advantage of it is not quite clear, except that the asbestos is indestructible. Silk or flax would answer as well. Fully saturated with silver nitrate, they would not undergo any change in the tooth-canal.

Some Failures Attending the Use of Weld's Chemico-Metallic Method of Filling Root-Canals.

BY DR. H. B. HINMAN, BUCYRUS, O.

ON the 10th of last July I removed the pulp from a second upper left bicuspid, for Miss G., age 22, and filled the root canal with a Weld's chemico-metallic point, following the directions given by the inventor. The tooth was then filled with amalgam.

On August 17th the patient returned with a severe alveolar abscess upon the tooth. The filling and point were removed, an incision made through the gum and alveolar process and the abscess treated and cured, in the usual way, the root being filled this time with chloro-percha and gutta-percha cones.

On July 15th an upper right first bicuspid was treated in a similar manner for the same patient—the pulp being thoroughly removed from both roots, and the roots being filled with the points. A gold crown was then inserted. The tooth gave no trouble until the middle of December, when it began to get sore. When the crown was removed on the 29th inst., there was a

copious flow of rather thick pus from the lingual root canal, as soon as the point was withdrawn.

At the same time at which I was doing the work on the teeth above-mentioned, I also devitalized the upper left first bicuspid and lower right second bicuspid, and filled the root-canals with chloro-percha and gutta-percha cones, and they have given no trouble whatever.

I used about thirty of the points during July and August, and have had one other similar experience.

While the others have given no trouble as yet, I am afraid that it will be "*au revoir*," but not good-bye."

Secondary, or Storage, Batteries for Cataphoresis.*

BY CHARLES A. HAWLEY, D.D.S., COLUMBUS, O.

WHAT is a storage battery, how does it act, and what is its especial fitness for cataphoresis? are the questions we wish to consider in this paper, and it is the belief that the better we understand the construction or action of an appliance of any kind the more intelligent and successful will be our use of it, that prompts the presentation of the subject for discussion here.

The history of the development of the storage battery goes back over a period of nearly forty years. Many attempts to store electricity by means of its action on various substances had previously been made, but Planté, a Frenchman, discovered the secret, the adaptability of lead for the purpose. He immersed two lead plates in dilute sulfuric acid, and connected one to the positive, the other to a negative, pole of a primary battery. A slight chemical change was produced between the plates and the electrolyte, and when they were connected by a wire an electric current was produced. They were then connected in a reverse order and charged and discharged, increasing the current each time, and as the chemical change became greater the discharge of current also increased. This process was continued for several months, with the final result of producing a "cell which when charged, had a thick coating of lead dioxid on the positive plate and of spongy lead on the negative; but when discharged had a coating of lead sulfate on both." During the discharge a very

* Read before the Ohio State Dental Society, Dec., 1897.

powerful current was produced, enough to melt iron rods. Though in the present improved storage batteries the style of cell and the process of forming are much changed, the principle is the same, —*i.e.*, the electricity is stored or accumulated in the form of an unstable chemical compound. The peculiar and valuable property of this compound is that its chemical energy can at any time be reconverted into electrical energy by connecting the two plates.

The current produced in the complete discharge is practically equal to that used in producing the chemical change in storing. In winding a clock we store the energy of motion by the tension of a steel spring; in the storage cell we might compare the action of the chemical compound to the tension of the clock spring, and electricity with the energy of motion, or the muscular power. This action is entirely different from that of a primary battery. In the primary battery the chemical disintegration of one of the plates by the action of the fluid produces the current, but this process can never be reversed.

A number of changes have been made in the form of storage batteries, leading up to the greatly improved and nearly perfect ones in use now. When the exact nature of the chemical compound on the plates was found it was but a step to coat lead plates with lead oxid and sulfuric acid, which, by a few days charging, could be changed to lead dioxid on the positive and spongy lead on the negative plate, thus saving the months of time in forming. Plates have also been made in the form of grids, with the active material, in the condition of paste, placed in the holes. The trouble with this form of plate has been found to be in the bending or buckling during discharge, which is caused by the great expansion of the paste. The paste is also apt to scale off the plates or fall out of the grids and, accumulating at the bottom, short-circuit the cell. Batteries are now on the market which claim to overcome completely these objections.

The especial fitness of storage batteries for cataphoresis lies in their constant and steady voltage during discharge, which is due to several causes: First, the internal resistance of the cell is very low, owing to the small space necessary between the plates. With perhaps a few exceptions, the internal resistance of primary batteries is very high, and interferes largely with their efficiency. Second, there is no such thing as polarization of a storage cell. Polarization unfits most primary cells for closed circuit work, or for holding a steady current for any length of time. The attempt.

to overcome it has led more than anything else to the great number and variety of cells on the market, and the number in itself is an evidence of failure. In comparison with the Edison direct current, the storage battery presents several advantages which we will mention briefly: First, freedom from the influence of induction currents along the line, or other causes which produce variation of voltage. Second, absence of danger during storms, accidents at power station, or ground connection by way of the fountain spittoon. Third, it obviates the trouble of reducing with a controller, the unnecessary high voltage of the Edison current.

The character and rate of discharge of a storage differs considerably from that of a primary battery, in that a very much larger volume of current can be obtained by decreasing the resistance in the external circuit. The capacity of a storage battery is measured in ampere hours, or the number of hours the battery will when fully charged, discharge one ampere current before becoming exhausted. But the discharge can be completely controlled by varying the resistance in the external circuit. For example, a ten ampere battery will discharge one ampere for ten hours, or, reducing the external resistance, ten amperes for one hour, or, reducing still further, twenty amperes for one-half hour, forty amperes one-fourth hour, etc. If used with very great external resistance, as in cataphoresis, it would discharge a current of say five milliamperes for two thousand hours. At this rate, if used one hour a day every day in the year, a ten ampere battery would last between five and six years before becoming exhausted. No such extent of current can be obtained from a primary battery of equal voltage. We might here again compare the storage battery in its discharge to the action of a clock spring, which, when wound, can be released at once by a sudden spring or by a steady motion for a long time. The batteries can be charged from almost any source of current, provided the voltage is at least ten per cent. higher than that of the battery, as otherwise the action would be reversed. The use of a battery for five or six years, as alluded to above, without charging, would probably not be practical, as manufacturers claim that, to keep them in best condition current should be added much oftener.

In practical results in cataphoresis, I have found that the storage battery carries out all that would be expected of it from theoretical consideration. After using the dry cell battery and Edison direct current with various shunt controllers, I have had

much better success with the storage battery with a series controller. The application is smooth and painless, and the pain limit can be very closely followed in increasing the current without signs of fluctuation. In other words, my experience seems to indicate that in cataphoresis the source of the current is as important a factor as the form of controller.

DISCUSSION.

WM. H. HERSH, Piqua, was opposed to the use of the storage battery for many reasons. The storage cell made up of lead plate immersed in sulfuric acid is not capable of originating any current in itself, but gives off current which it receives from some outside source. If it is left idle for any considerable time it will become sulfated and its strength will be lost. It must be used nearly constantly to give the best results, and the best cells only give out ninety per cent. of the current which has been put into them. Most cells will not give higher than from fifty to sixty per cent. The constancy in voltage is no better than the salammoniac cells, and bichromate cells, or dry cells, are just as regular. The only case in which the storage battery is to be preferred is when you are using a shunt instrument of low voltage. His experience had taught him that storage cells were very dirty, and objectionable on this account. When compared with the 110-volt current, the storage cell is superior, but there is no occasion to use the 110-volt current, nor should a battery of high capacity be used when all that is needed is from two to five milliamperes.

DR. W. A. PRICE, Cleveland, commended the paper highly, but was disappointed that it did not go into detail more thoroughly as to the bulk and price of the batteries and expense of maintaining them. For cataphoric uses the cell should be of very low amperage. If we had a cell, such as one firm tried to get up, of one ampere it would be very satisfactory, but it is questionable whether we could get a more uniform current than from a primary cell. He had used dry cells for a year; these cost only twenty-five cents each, and seemed as good at the end of the year as at the beginning. He thought the ideal apparatus for furnishing current for cataphoric purposes was a little water-power dynamo which would run by the power of water from the spigot, and utilize these for charging storage batteries, using small bat-

teries and charging them frequently. A fifty-ampere hour storage battery would cost fourteen dollars each, while the dry cells cost only twenty-five cents each. They should be used in series and so arranged as to get a very gradual increase. He asked how much current those present used.

DR. L. E. CUSTER said he used about three-fifths of an ampere.

DR. W. A. PRICE said there was no milliamperemeter made that gave us small enough graduations, nor is there a good controller in the market for cataphoresis.

DR. W. H. TODD, Columbus, asked if a milliammeter could be made to register low enough to work in series, so that it would not affect the cataphoric operations.

DR. L. E. CUSTER said it would not affect it at all; you would add more voltage.

DR. W. A. PRICE said the lower the sensitiveness the less would be the resistance, and the less the resistance was the more sensitive would be the instrument.

DR. W. H. HERSH said he used as a maximum current from two to five milliamperes. He does not mean this on teeth that are not alive, but for relief of sensitive dentin. His milliammeter will register about the same as others. He had constructed one whose needle moved about seven inches for one milliamperemeter, but he found that it was sensitive to outside influences, and has been told that all such would of necessity be so.

DR. C. A. HAWLEY said that a dry-cell battery when new was efficient, but when about half used up there would be much fluctuation in the current. If there were no fluctuations in the current there would be no necessity for shunt controllers. He believed that a storage battery could be maintained in good condition with the use a dentist would give it in his work, and they are not expensive. He spoke of the Willard concentric cell battery, which he said cost fifteen dollars and was not dirty. The controller is a series controller, and it will not give success with dry cells. The Edison current will show fluctuation of voltage. In one test which he made a Mesco dry cell lost in thirty minutes about sixty per cent. of its strength, while a storage battery began with two and one-tenth volts and left off one and ninety-seven-hundredths.

President's Address.*

BY L. E. CUSTER, B.S., D.D.S., DAYTON, O.

WE are met for our thirty-first annual session. The work done by this society in the past and the good which it is yearly accomplishing need scarcely be brought to your notice. It has been my privilege in the past few years to be present at the meetings of the state societies of a number of different states, and, with the exception of the Illinois, I have found no better organizations and no more or better work accomplished than in our own.

The objection has been raised by the dentist who has not had the advantage of a college course that the time of the meetings is taken up by college professors with papers and theories in which they have no interest. While some may think it a loss of time to listen to the professor, this class is growing smaller and smaller. The day, we think, is not far distant when every one in our dental societies will appreciate the papers that come from our teachers and the older heads, to the extent that they will not call every one a "fine-spun theory." We should regard it a privilege rather than a burden. For my own part, and I think I speak for a great many, it is a pleasure to occasionally meet our old friends, protoplasm, the Miller theory of caries, or even a group of alcohol radicals.

The sphere of the young practitioner is one of no less importance to the society and to the profession than the older ones. It is he who in time is to take the place where now stand those who are his seniors. The beginner is not only profited by attending a dental society, but he can be a benefit to the profession from the very beginning of his career. He need not wait till he is an old man before attending a dental society. Many a young man, upon finishing his college course, enters upon the practice of dentistry with the impression that he knows it all; that there is nothing further to be learned; that there are no more worlds to conquer, and that his attendance upon a dental society would be a loss of time and energy. The student, the progressive man, however, finds delight and profit in the dental society. He regards his college education only as a stepping-stone to higher attainments.

*Read before the Ohio State Dental Society, December, 1897.

He feels that in the college he only learned the index to a great library; that he has only learned where knowledge is to be found. Such an one appreciates the good to be derived from meeting with others in the search for knowledge. Longfellow has truly said, "The mind of the scholar, if you would have it large and liberal, should come in contact with other minds."

The young practitioner may not only be benefited by what he learns from the experience of others, but, if he immediately takes part in furnishing his share of the papers presented, he will himself be benefitted thereby. If you do not know anything on a subject, write an essay upon it and you will be surprised to find how much you have learned.

The importance of the young practitioner and the good which he has accomplished in the progress of dentistry has not, I think, been fully accredited. Some of the most important achievements made in dentistry have been accomplished by very young dentists, and I think it may safely be said that the majority of the substantial advances made are due to men under forty years of age. Every young man who enters the profession focuses his lens upon an object, and sooner or later the truth will be known. He comes with a new mind, and, it may be, in using a lens of lower power, sees the very thing that has obstructed the vision of those older in the profession, who are working, as it were, with higher powers.

For years our state has been made the dumping-ground for many of our neighboring states. Prior to the new law, in 1892, there was only an imitation of a dental law, but the character and integrity of the examiners had a wholesome effect.

Nearly every member of this society knows the great effort that was exerted to secure even the McMakin law, and, in the face of the bad state of things resulting from it, there is little encouragement to continue the effort. But it appears from the experience of the past that if the matter is taken up systematically, by introducing a single amendment at a time, we will in time have a better law than by the introduction of a whole new bill. The frame-work of the law, as it now stands, is good enough for the purpose, and it is but a matter of correcting it in detail; and in that way, in the end, a much more satisfactory law will be the result.

There is fresh in the memory of many here a dental meeting held in Detroit some three years ago. There has not been since

the Dental Congress of 1893, such a successful and fruitful meeting of dentists anywhere in our land. The promoters were so elated with the results that it was decided to hold another three years from that time, and the honor of entertaining the proposed meeting fell to Ohio.

The time is near at hand, and, this being the last meeting of this society before the appointed time, it will be seen that we must give some of our time to arranging for this.

Within the past year the practicability of cataphoresis has been rather fully tested, and, while there may not be the enthusiasm that was shown a year ago, it would seem that this method of obtunding hypersensitive dentin has about reached the level that it will maintain. Owing to the care, the time, and the knowledge required for making the operation a success, it will not be used in every case that presents; nor should it be.

The danger to the pulp is a matter not to be overlooked, and this should be the controlling factor in the selection of cases. It seems that if the process is carried far enough to obtund the pulp to any great extent, trouble will follow. It is almost impossible to obtund the dentin in the walls of a deep cavity, for the reason that the current, finding a better conductor in the thin layer of half-calcified dentin at the bottom of the cavity, nearly all of it flows directly into the pulp through the bottom of the cavity. The walls of a deep cavity are not usually obtunded by the current, except in a reflex manner by first obtunding the pulp through the thin layer of dentin at the bottom of the cavity. Herein lies the danger. The pulp is already trembling between life and death by the nearness to exposure, and this condition is not helped by the current of electricity which is very likely to be used in such cases, to the extent that electrolysis of the pulp is produced. In cavities where the pulp is somewhat distant, it is entirely feasible to use the current for obtunding the dentin without endangering the pulp. No one should perform the operation without using a millimeter, not any more for measuring the current flowing through the tooth than for the purpose of detecting whether the current may be leaking around the tooth and producing destructive electrolysis of the gum-tissue.

Some five years ago I happened to be in Basel, Switzerland, and saw Dr. DeTrey making gold fillings with a form of gold devised by him. I was astonished at the rapidity with which he was able to build up a large filling.

Of late this gold has been introduced in this country. It appears to possess a property entirely different from any other form of gold now on the market. It is a precipitated gold, and comes in the forms of mats or layers, from one-thirty-second to one sixteenth of an inch in thickness. Under the instrument it is condensed with wonderful evenness and density, and those who have used Watt's gold can imagine the nature of it by comparing Watt's Crystal gold to a dried-out sponge and the DeTrey gold to a piece of spunk. This gold builds up very rapidly, and is especially fitted for starting fillings; for use in places difficult of access; for building up the body of very large filling, and for making a dense masticating surface. A form of gold quite similar to the DeTrey gold is that made by Hoff & McFarland, of Frankfurt, Germany. This differs from the DeTrey principally in the thickness of the layers in which it is furnished, and, strange to say, the color of the finished fillings. The DeTrey gold is of a somewhat brassy hue, while the Hoff & McFarland gold is of a darker red.

Both of these forms of gold require special instruments, but the Royce pluggers will answer very well.

This year, as the program shows, a day will be given to clinics. That this is a desirable feature all will agree. An innovation due Dr. Callahan will be tried. Instead of demonstrating upon a patient, these operations and demonstrations will be made upon models, which can not only be seen by a great many, but can be passed around for a more minute inspection. This enables the operator to point out many things in detail which otherwise could not be seen in a clinic upon a human subject.

To What Extent are We Justified in Giving Our Patients Systemic Treatment?*

BY W. B. FULTON, B.S., D.D.S., BIRMINGHAM, ALA.

UNDER existing conditions this question is untenable, because the law granting the dentist the right to practice his profession, bestows no rights to practice medicine. But taking the question in the abstract the right to practice the dental profession involves

*Abstract of Paper read before the Mississippi and Alabama Dental Associations, 1897.

a broad and extensive knowledge of physiology and pathology, of astrology and the physiological chemistry of the teeth, and the general processes of nutrition. It is well-nigh appalling to trace the far-reaching influence of even one severe acute attack of indigestion in a child upon the structural development of its physiological economy, while the oft repeated attacks of this common trouble of childhood makes it stand out as one of the most prominent and important causes of the various pathological manifestations due to mal-nutrition. In the rapid development of the child, the bones, and the teeth especially, abstract from the blood the solid constituents for their formation, an imperfect digestion of whatever mode or degree lessening the supply to the system; unless corrected first the fat diminishes, the child becoming more or less emaciated, then the muscles become soft and flabby, later and more slowly, the teeth showing the impress upon the system. It is astonishing to note the frequency of rachitis as existing in the young, and the fact that it is not confined to the poorer classes but prevails among the children of the wealthiest and healthiest, should incite us to research and broader study. The etiology may be either hygienic—in either child or mother, dietetic—most often occurring in hand-fed children and most frequently in those whose food is of a farinaceous character, or chemical when the dyspeptic formations gives rise to the formation of lactic acid. The case is cited of a woman who, having unavoidably inhaled lactic acid while feeding this substance to animals, gave birth to a rachitic child which died soon after birth, the cranial bones being entirely uncalcified.

When opportunity offers, of carressing in admiring a child, without attracting attention to what you are doing, run your finger or hand over the child's head and note the condition of the fontanelles, especially the anterior. By the normal order of ossification, the fontanelles should close—the posterior a few months after birth, the anterior during the first and second years. The fact that the process of closing is retarded, indicating a creation of calcification when accompanied with the diagnostic symptoms of either acute or chronic dyspepsia, is an index of mal-nutrition and consequently a cessation of calcification in the teeth. In the numerous cases examined of rachitic embryos, there has been found many abnormalities in the dentine, jawbones, and various irregularities. If we hope to combat pathological conditions that

must ensue in the dental organs, we must necessarily treat the child systemically—hygienically by giving instructions as to nutrition, and judicious exercise both of body and mind, and dietetically by nourishing and properly prepared food, guarding against all excesses.

DYSCRASIA HERPETICA.

During the period of childhood the system is frequently disturbed by the various cutaneous diseases, varicella, rubeola, etc., with resulting pits, fissures, grooves, etc., in the teeth. These diseases may be of short duration, but the etiology lies in the presence of micrococci, and after subsidence there may be complicated sequelæ, anemia, pemphigus, urticaria, etc., lowering the vitality and the nutritive capability of the blood. The most rational treatment is prophylactic, building up the blood to its full nutritive capacity. Not until that is accomplished will attempts at combatting decay be successful.

Dental manipulations for young school girls who are pals and anemic will prove unsuccessful unless the anemic condition is remedied by systemic tonic treatment.

Prescribe as though it were a part of your mechanical or surgical work and you will be happy in seeing the results. The nutritive function of the blood being impaired or lowered we are justified in treating the symptoms as they arise in order to build up the blood that the nutrition of the teeth may be improved. The teeth are very likely to show the impress upon the system before the resources of the doctor of medical science are requested.

DYSCRASIA PALUDAL.

A patient comes to your office suffering from severe periodontitis or pulpitis. On inquiry you find that with the paroxysmal pain of pulp irritation is combined periodicity, hemi-crania, more severe in the morning, gradually subsiding toward evening. You recognize "malaria" and know that systemic treatment by arsenic and quinia must supplement your local dental treatment before the odontalgia and facial neuralgia periodontitis or pulpitis will yield. Again, the malaria may present itself in enteric difficulties, and in order to combat the dental difficulty, the system must necessarily first be freed from the cause, and we must give a laxative, or in more cases a purgative along with our dental local treatment.

DYSCRASIA POTATORUM.

Alcoholism: dyscrasia saturnica—lead poisoning, with its distinctive blue line on the gums; dyscrasia scrofulosa and tuberculosa; dyscrasia uric acid, etc., will each disease in turn, all showing the close relationship of the teeth to the rest of the human economy, the final conclusion being: That just to the extent of the knowledge, study, and research of the dentist with the human system, as related to the dental structures, so just to that extent is he justifiable in treating his patients systematically, and a thorough knowledge and practice along these lines, combined with dental manipulations, art and skill, makes the dentist who will stand at the head of dental science; one who is an honor to his profession, a blessing to humanity, and a useful instrument in the hands of his God.

Replantation in Pyorrhea Alveolaris.*

BY ROBERT EUGENE PAYNE, M.D., D.D.S., NEW YORK.

In the history of implantation, transplantation and replantation, the latter has probably been the most successful, possibly because a portion of the membrane remains intact, acting as a scaffolding, or not unlike a sponge graft, in which loops of tissue quickly form, aiding in the formation of a provisional callus, which later becomes disease bone.

In pyorrhea alveolaris, when the teeth have become very loose and partly pushed out of their sockets, assuming distortions and mal-positions by elongation and mal seclusion, extreme measures are required to correct the condition.

Believing that I go to the surgical limit in my efforts to effect a cure, I will give in minute detail a description of a case that covers my plan of treatment most thoroughly.

Patient, lady, forty, well-to-do, willing to pay for treatment. Has been under treatment for several years for pyorrhea; informed that three upper front teeth must be lost. Refused to wear plate; teeth wired in; exhibits casts showing marked mal-occlusion; upper and lower front teeth crowded between canines;

*Abstract of Paper read at Southern Dental Association, Old Point Comfort, Va., August, 1897.

long lower lateral laps over canine and pushes upper central and lateral out, making a deformity so prominent as to have been made a feature in passport description. Upper right central and lateral and left bicuspid elongated and sockets almost obliterated. Five dead pulps, gums congested, painful, discharging pus. Two dead pulps in molars were removed, canals sterilized with 25 per cent. pyrozone, placing thumb over opening, driving it through the root and sterilizing beyond the apex. Roots filled with paraffine and salol.

The next step was removal of calculus from roots, taking three teeth at a sitting, using Rigg's and Younger's scalers, applying in the bottom of the sockets a 2 per cent. solution cocaine solution containing one-third glycerin and a few drops iodine, obtaining a very perfect anesthesia. Pockets washed out with warm boiled water and a drop or two of 25 per cent. pyrozone introduced. Wash this out, dry gum and pocket as far as possible and with minim syringe place two or three drops concentrated lactic acid at the bottom of the pockets. Then apply each time 3 per cent. pyrozone as prescribed for use on tooth-brush night and morning and as mouth-wash during the day.

This was repeated on other teeth successively until all the calculus was thoroughly removed from all the teeth and all the pockets treated. The next thing to receive attention is the crowded lower incisors which are made narrower, the cutting edges evened up and all drawn into position by means of a C. & D. silk twist, removed two or three times a week. If tied carefully and taut this will shrink, drawing the teeth in place. This was effected in two weeks when they were splinted by being bound together with "00" silk twist, waxed and secured with square knots. The next step was to remove the three upper loose teeth, which could have been done with the fingers. The pulps were dead in all. The teeth were sterilized, contents of pulp chambers removed, root canals filled with paraffine and salol. The gum on either side of the sockets was then injected with five minims 2 per cent. cocaine solution, the sockets sterilized with pyrozone, and with Ottolengui reamer the sockets deepened sufficiently to receive the teeth. The bony tissue in the bottom of the partially obliterated sockets was very dense. The upper four incisors were also reduced in size to get these in the arch between the canines. To make sure that replanted teeth are surgically clean, a few fine crystals of resor-

cin are placed on the apex of the root just before placing it in the socket. These crystals dissolve readily and the wound heals quickly with very slight soreness. These teeth were splinted for thirty days and then a gold plate applied, swaged to fit over cutting edges, as shown in model. The essential points in the treatment are removal of dead pulps and filling roots, correcting irregularities and mal-occlusion, (in this case by reducing size of teeth), deepening sockets and replanting elongated loosened teeth, removal of calculus, treatment of pockets, splinting. Above all, surgical cleanliness throughout. Special attention was called to the use of resorcin crystals at the apex of root of implanted teeth. The teeth became firm in from thirty to sixty days after splinting. In the discussion of this paper—

DR. GORDON WHITE said that with patience and perseverance on the part of the dentist, and with the co-operation of the patient, the usefulness of teeth even very seriously affected with pyorrhea, could be prolonged many years, but he had never known any cases of positive cure; he does not believe that it can ever be entirely eradicated. He has the best results from the lactic-acid treatment introduced by Dr. Younger, though when the roots of the teeth are very sensitive, he uses the lactate of silver. It does not dissolve in less than fifteen times its own weight in water, so that if the dry powder is placed in the pocket, it acts as a foreign body and increases the irritation. If the deposits are thoroughly removed the secretion of pus will be stopped and the gum will contract so closely that it is impossible to pass the finest instrument between the gum tissue and the side of the tooth without causing severe pain. It may not be technically a *union*, but practically it is so.

DR. JOHN S. MARSHALL criticised the use of the terms secretion and excretion, as applied to the formation of pus, which is a product, the result of the death of leucocytes. When asked for a more correct term, Dr. Marshall replied—the word formation covers it.

DR. H. E. BEACH: There is a vast difference between checking the progress of a disease and eradicating it. I do not think the treatment has yet been found that will make a radical cure of pyorrhea though I hope to see the day when it will be done.

DR. J. P. CORLEY: There is one sure cure for pyorrhea and that is to extract the tooth. What does Dr. Beach consider a

cure? Is it to absolutely obliterate the footprints of the disease?

DR. BEACH: It must be eradicated to the extent that it does not return within two years. Ten years ago I offered a reward of a thousand dollars for a case coming within that limit, but the reward has not yet been claimed.

DR. CORLEY: If the physician was required to keep his patients well for two years after curing them of typhoid fever I do not believe we would have many doctors.

DR. J. S. MARSHALL spoke at some length of senile changes as a factor in the etiology of pyorrhea alveolaris, the teeth dropping out as the hair falls out, both teeth and hair being dormal appendages. As the falling out of the hair is apparently due to a senile change in the bulbs of the hair, so also the loosening of the teeth in pyorrhea may be the result of senile changes affecting the membranes around the roots of the teeth. He said: I do not claim this as *the cause*, but I believe it is one of the causative factors in this disease.

DR. C. N. PEIRCE elucidated at some length the uric acid diathesis theory, in true pyorrhea, the system being loaded with waste products, causing a congestion at the apical spaces with an exudation of lime salts deposited at the apical end of the root, from the serum, before there is any distinctive action at the gingival border.

COMPILATIONS.

The Graphophone in Dentistry.

In the November issue of the *Western Dental Journal* there appeared a copied editorial from the *Dental Practitioner*, entitled "What of To-morrow," treating of the supposed advancement of dentistry in the next few generations.

It was a wonderful conglomeration of scientific data, treating of bolted flour, ovaries, Rhadamanthus, pink teas, and other scientific topics.

According to the editor, the marvelous advancements made would not be observed by the practitioner of to-day, as the statute of limitation would bar us from being present, nor would the practitioner of the future be able to realize the conditions under which

we of this era labor. For not only is the anatomical system to be renovated and remodelled, but under the skillful guidance of scientists, aided by microbes and other celebrities, the physiological, pathological, psychological and humbuglogical natures are to be raised to a standard so high that we of to-day, who deal with the frail humanity of this age, cannot conceive or appreciate the changes to be made.

After reading this wonderful forecast of the future, the idea was impressed upon me that it was my duty to at least prepare for our descendants some record of the present day, so that they would more thoroughly appreciate their surroundings.

Modern science has placed at my disposal an appliance whereby there can be preserved for future use an accurate and indisputable record of to day's doings.

The graphophone was called into use, and by an ingenious arrangement of sounding boards, live and dead wires, and other numerous scientific appliances not necessary to mention, as probably very few of you would understand their use, the receiver of the graphophone was adjusted so as to retain every sound emanating from any portion of my suite of rooms.

The instructions given to the electrician, who under my guiding genius was to supervise the instrument, were to select some day unknown to me for receiving the impressions, so that posterity could not say I was loaded for the occasion.

Notwithstanding my instructions to him, my intentions were to be prepared for him, and make a remarkable record for our descendants to hear. But the electrician's sense of acuteness was well developed, and, as well as being on to his job, he was on to me; for the day following the completion of details he informed me he was ready for me to hear as others would. He had taken advantage of me, well-knowing I did not anticipate such early action; consequently the result was not as anticipated by me, as many brilliant thoughts calculated to edify were unexpressed.

But, such as the result is, it shall be given for your perusal, hoping there will be no unjust criticism, as this is a first effort, and any mistakes made will be rectified in our next.

6:00 a. m.—Curtain-raiser. Enter head janitor and assistant. Swish, swish.

"There, that room is swept—open the window—never mind dusting. Jim, go into the other room, pick up the cotton, sand-

paper, and dirty towels from the floor—don't sweep—you raise a dust and it settles on the window, and then Doc will want 'em cleaned. Here, leave that spittoon alone, you cleaned that last week. Get a move on you—we've been here three minutes now. Here, go light on that—phew! that's the stuff—ten years old—put some water in it, he will never know the difference."

8:30 a. m.—Enter proprietor.

"D—— that 'nigger.' Dust everywhere and no dust to spend. Wish that graphophone was running, would recite a few lines to it, some gems I borrowed from Patterson on pyorrhea, or I might throw a few prehistoric Thompsonian thoughts around, to be gathered up and credited to me.

"Ah! that cold of mine still stays with me—where's that bottle? Phew! that's thin, tastes like Missouri River water—well, I believe it is. Now, Mr. Nigger, we will just drop you for that, a few drops of croton, and you will probably take a vacation to-morrow.

"Ah! Good morning."

"Ma can't come this morning, she has to go shopping. Bullene's are selling 10-cent gingham for 9 1/3 and ma wants to make me some aprons; says she will come in this afternoon perhaps."

"Here, you give ma this note.

"Where's that day-book—I wonder if ma thinks I am here for my health—ma saved 4 1/3 on gingham, and pa lost—well, that filling was three dollars, we will make that four, and just raise that to three, and that one five—rather expensive gingham. I wish Bullene would sign the code of ethics, his advertising interferes with my business."

"This the dentist? How much do you charge for a set of teeth? Broke these all to pieces, couldn't keep them in anyhow. What! fifteen dollars? Great guns, man! I only paid five dollars for these; got them of one of the best dentists in the city; he has four chairs and advertises that he guarantees his work, but he won't fix these unless I pay him. You must want to retire from business while you are young. I can't do business with you—will go up to the Klondike Parlors; they may not be hot people, but you are too hot for me."

"Hello, Doc! Got the finest line of stuff published—one dollar down, one dollar a month, see them covers—full leather back, gilt-edged, hand-sewed, full line of Dickens, Thackeray, Field—

Ever read Field? Great man Field. When me and him worked on the Kansas City *Times*, Gene said to me one day: 'Tom,' said he, 'when I own a newspaper—' Oh, well, if you are busy, I won't bother you. See them backs, ain't they birds? only one dollar a month."

"Good morning, doctor. Are you at leisure? was afraid you would be busy. I broke the point of that tooth last night and it annoys me dreadfully—hope the nerve is not exposed—be gentle as you can. I am so awful nervous; I know it is foolish to be so, but I cannot help it. You say you won't have to fill it, polishing will do? well, is that not nice! Just look at my other teeth, and perhaps you had better clean them, it is nearly six months since they were cleaned. Your work has been *so* satisfactory. Mamma thinks my teeth are in better condition since you have had the care of them than they ever have been, and papa says your charges are *so* reasonable. Just send the bill to him. And by the way, you'd better give me a day for sister; she neglects her teeth shamefully. So glad you did not have to fill that tooth. Good-bye."

"Well, I must have dozed, surely that was a dream. That must be a sample of 1925 experience."

1:30 p. m.

"Hey, there, dad! Mamma went to the card party—sent me down to amuse you, said I could play with your machine if I kept quiet. Don't want any picture-books, want to ride up and down in your chair. You never do let me play—wish I hadn't come. Give me a nickel. I'm hungry."

Ah! doctor! on time to-day—try always to be prompt. Tooth is a little sore yet—expect it needs more treatment."

"Say, Mister, what's dad doing to you? does it hurt? My! you spit lots, think you would run dry. Got any little boys like me? Do they come to your office? Does your wife go to card parties? You got any machine like this? What's your boy's name? Now, dad, you never will let me talk—ma does. Give me 'nother nickel—say that's a shiny one. Got any more?"

"Well, doctor, no trouble telling whose boy that is, he is so quiet. To-morrow you say, some time? All right. Bye-bye, son."

"Well, here I am back—broke that plate right in the middle eating doughnuts. No; they weren't hickory nuts; have been awful careful with them. Yes, I did drop them in the wash-bowl."

Didn't think it hurt them any. Well, I thought it was them doughnuts, for I said to ma, 'Now you will have to crack the next doughnuts, if they are going to break my teeth.' Cost me two dollars! My! I didn't know you charged for fixing them. My! have to wait until to-morrow? Well, I'll be more careful next time."

"Say, dad, did she grow those teeth herself? Mine don't come out. Give me a drink. Got another shiny nickel? I'm hungry. Say, you are sitting on my chewing gum. Now I can't chew it any more, it is all full of stuff from your pants. Why, dad, you swore then right in front of me and I heard ma tell you, you must not swear when I was around, for I was so apt to follow in your footsteps. Say, give me that candy; it was so sticky, I put it in your overcoat pocket. Now, just look at it, all stuck to your gloves. I ain't coming down here any more. Boo-hoo."

"No, sir. I don't want any life insurance, fire insurance, accident insurance or any other insurance."

"Beg pardon, sir; I'll call again. A little stormy to day. sun may shine to-morrow."

"Going home, dad? Why, you never come home this early. You ain't so bad, dad. I'm coming again. Here, wipe my mouth, I want to kiss you."—DAD, in *Western Dental Journal*.

ALL SORTS.

To Make Pins for Removable Bridges.

When I need a small piece of gold wire for pins in removable bridge-work, etc., and am not situated where I can readily procure just what I want without delay, the amount being too small to run into an ingot without a great deal of trouble, I proceed as follows: I take a piece of 22k. plate and cut it into strips, wide enough to allow of its being hammered and shaped for the draw-plate afterwards. I then place the strips side to side, and bind them together with a small piece of iron wire to hold them in place. Place the strips with their edges upward in one of the grooves of Dr. Melotte's soldering-block, paint with borax water, and put a small piece of 20k. solder on each end and one in the middle, taking care that the solder does not touch the iron wire, then solder with the blow-pipe; take the iron wire off, and solder all along the piece, turn it over and solder

the other side, taking care to use as little solder as possible, then boil it in water with a few drops of sulfuric acid, to clean it, and remove the borax (a common tea cup will do to boil it in), hammer it into a round shape, anneal it and draw it through a draw-plate to the desired thickness. It must be annealed occasionally while being drawn, except for the last two holes. By drawing through the last two holes without annealing, the wire is hardened and tempered. A piece of gold worked this way is not so brittle as it would be by casting it into a small ingot, and it will be found to work easy and tough.—DR. McDONALD, *Cosmos*.

Improvement in Methods of Retaining Artificial Dentures in the Mouth and the Elimination of the Irritations Caused by Vulcanite Plates.

After securing an accurate plaster cast, it is coated with rubber cement,—i. e., sheet rubber cut in small pieces and dissolved in chloroform. (The rubber cement supplied by the S. S. White Dental Manufacturing Co. is excellent for this purpose.) Then, after removing the tin-foil, slightly warm the adhesive plate and press it closely with thumb and fingers around the cast, allowing the adhesive plate to cover the whole palatal surface as well as the alveolar ridge. It is then trimmed with a hot knife and given a coating of the rubber cement. A sheet of rubber, either red or black, follows this, covering the same surface and being pressed closely to the cast as before, the surplus being trimmed with a hot knife. The cast in this condition is now placed upon a piece of paper and covered entirely with plaster; after the plaster has set, bind with wire and place in the vulcanizer.

This plate is to be vulcanized forty-five minutes at 320°. An empty flask, or half flask, should be placed in the vulcanizer upon which the plaster investment is allowed to rest, as the water should not reach it.

This will produce the base-plate with the adhesive plate attached and incorporated with the rubber. It will be found to be soft and flexible, and to impart a soothing sensation to the mucous membrane of the mouth. The base-plate is now tried in the mouth, and trimmed to accommodate the muscles, and used for getting the bite, being waxed up in the usual manner. After obtaining the bite the teeth are placed upon the plate with wax and again tried in the mouth. The case is now flaked in the usual way; however, when the wax is boiled out, a coating of rubber cement is applied to the alveolar ridge to insure adhesion of the rubber. The usual method is now followed, the case being vulcanized one hour at 320°. When the case is taken from the vulcanizer, the adhesive

plate will be covered to some extent with rubber cement ; however, this will disappear when worn a short while. The forty-five minutes consumed in vulcanizing the base-plate is more than compensated for by the time usually spent in waxing up, finishing, etc.—R. M. HARLAN in *Cosmos*.

The Use of Screws.

To avoid confusion care should be taken in the selection of the size of the instruments and screws ; and where these are not fixed in sets, they should be tested *always* before using. This confusion can in a great measure be avoided by confining ourselves to the use of two or three sizes of screws ; in most cases two will do—the small size anchor screw, one hundred threads to the inch, and a large size about forty-eight threads to the inch.

For the anchor screw there is a set of instruments complete that could not well be improved upon, though there may be a choice of these. When no drill is furnished with the tap and carrier it is well to test the drill as to size each time before using.

As to the manipulation in the use of the anchor screw, having decided where we will place our screw, we should make sure that the way is clear to direct approach to that point.

The first step in the manipulation is to countersink with a small round bur a seat for the filling at the point where the drilled hole is to be.

With a “ limit drill ” in the engine, carry the drill steadily up to the shoulder, and then withdraw quickly while it is revolving ; if allowed to stop it may break off in the drill-hole when you attempt to remove it.

Take the tap, place it cautiously in the drilled hole, give one or two turns ; when it is engaged let it be free, so that it may line up with the drilled hole, repeating this procedure with gentle pressure until the tap is arrested. It must be kept in mind that the instrument is a delicate one, and may break in the hole if rudely handled.

We prefer the screw-chuck as a carrier, because we can regulate the length of the screw and the screw is held firm, so that in placing it the thread on the wire or in the tooth is not liable to be torn. With the screw in the carrier the procedure should be the same as with the tap, leaving the instrument free after every few turns, that it may be in a line with the drilled and tapped hole. It should be tested by gentle turning to make sure that it is fixed. Then loosen the handle from the shaft first ; unscrew the shaft from the anchor screw. A word of caution : the drill and tap being more slender than the chuck-screw carrier, it must be borne in mind when using the former that room must be left for the

use of the latter, so that it may not come in contact with the tooth at any point other than the seat of the filling, when the screw is placed or being placed.

The placing of the larger screws in the pulp-canal, while not requiring the same delicacy of manipulation, requires care. Where the roots can be approached directly but little difficulty will be experienced; where they must be approached at an angle, as in the case of the lower second molar, the main difficulty is in making the drill-hole in a line with the course of the canal. The right-angle attachments do not supply the need. An instrument such as we have here is one that can be depended upon; the reach is long enough, and yet not too long; the shifting angle is the main advantage to be had in its use.

The short finger chucks can be used for tapping and placing the screws.

The presentation of our subject—the use of the screw for filling, and especially the use of the anchor screw—is not complete without some reference to the manipulation about the screw in filling.

The object in making a seat for the filling, in which the screw is placed, is to give stability to the filling. And this is accomplished by condensing the gold around the base of the screw and following it up until the screw is covered. When we consider the limited amount of surface the screw presents, we can understand how necessary it is to condense the gold well to make it secure. For this reason we would advise the use of small pointed pluggers, straight and contra-curved.

Gold should be worked all around the screw from the first, and not wedged in on one side, leaving the other side unsupported.

Some object to the use of screws on account of the complications and care necessary in placing and filling, but this certainly has no weight compared with the security and results attained by their use.—H. W. ARTHUR, in *Cosmos*.

A Case in Practice.

The right superior cuspid which was largely filled, was broken in such a way that the labial line of the fracture was some distance above the alveolus, but there was sufficient root left to support a pivot crown, except that it was so far under the gum as to render such an operation unstable and unsatisfactory, in that it would be difficult to make a strong piece of work under such conditions and the constant exudation of pus, when the tooth lay in contact with the margin of the alveolus would not only be a source of annoyance to the patient, but could only terminate disastrously to the surrounding tissues and hasten the loss of the tooth.

It was therefore determined to bring the root down to the gum margin and crown it in its new position, as other teeth are crowned. This was accomplished by placing a band around the lateral incisor and one around the first bicuspid, and soldering a gold bar across from one to the other, having a hole of sufficient size directly over the cuspid root. Through this a threaded wire was passed and cemented into the root. A nut was placed on the wire below the bar, which being turned daily, soon brought the root to the desired position, where it was held firmly by the same screw until it was fixed by the process of ossification. A gold-porcelain crown was then made and fitted with the most pleasing and happy effect.

Of course this kind of work can only be done for those who appreciate their teeth to a degree that would suggest to them that the operator must have adequate compensation for his services. If I am pardoned for the assertion, I will say that a fee of \$50 is no more than modest in such a case. But how few people would think a front tooth worth that amount? Nevertheless it is fair to say the patient in the case is a member of my own immediate family, and I have to foot the bill myself.—D. D. ATKINSON, *Amer. Dentat Weekly*.

Method of Banding Logan Crowns.

First, adjust the band to the root, and crown in the ordinary manner. Then with a fine stone remove the glazing from that portion of the crown which is covered by the band, and paint this surface with the prepared gold used in China decorating, and burn it into the porcelain; then re-adjust the band and solder the two together.

I use a common blow pipe and a small platinum muffle of my own construction, lined with asbestos cloth to prevent the tooth from being heated up too quickly. When I have finished firing, I remove the muffle and tooth to a small box partly filled with dry pumice, to allow of cooling very slowly. If this is carefully done there is no danger of checking the crown.—A. J. RUST, in *Items of Interest*.

Loss of Nervous Power resulting from a Carious Tooth.

Dr. J. H. Edward cites the following case in the *Jour. Brit. Dentol Association*:

“A young lady was brought in a carriage to my residence to have her mouth examined. On being removed, she was supported by a lady on one side and a maid-servant on the other, and her entire muscular

system seemed paralyzed. Her legs trailed on the ground like useless appendages. Her arms, when raised, fell powerless immediately when unsupported, and even the muscles of the tongue were paralyzed; and in her efforts to speak this important organ remained in a quiescent state. On examining the mouth I perceived a *dens sapientia* of the mandible very carious, and deeply embedded in the temporal muscle, just below the ridge of the coronoid process, in which locality there was extensive inflammation. I suggested the removal of the latter tooth, and though I had anticipated some advantage from the operation the actual results astonished me. She instantly obtained the free motion of her tongue, which she immediately used to communicate an important fact, viz., 'that ever since the time the tooth I had extracted had been making its way through the gum, she could date the gradual loss of power over her limbs, etc.' I saw her about a month afterwards; she could then use her hand and arm. Since then I have not seen what further progress she has made.

In this case we had palpable proof that the phenomena could only be explained by assuming that the local irritation (shown by the great vascularity of the part) had, in the first instance, affected the maxillary branch of the fifth nerve, implicating the trunk of the nerve itself, and ultimately communicating the disturbed condition by reflex action to the spinal system. From this and similar cases I think that there must be some modification in the *vis nervosa*, depending on some predisposition, local or general, or from some peculiar constitutional condition, for if such were not the case, why does not every tooth similarly affected produce, in all cases, uniformly similar consequences, in obedience to the law—like causes produce like effects?"

Device for Heating Water.

Take a small brass tube $2\frac{1}{2}$ inches in diameter and 4 inches in length, which can be gotten at any brass goods store, and make a brass base for the same, with a hole in the center large enough to admit a 10 c. p. lamp. A brass tube, small in diameter and of any desired length, should be riveted to the large tube, so that it can be fastened to the wall or bracket. Put a partition in between the lamp and water glass to protect the eyes when getting a syringe full of water.

The lamp makes too much heat, consequently a damper is necessary. Put it in the back or on the side away from the operator, as no one wishes the light to shine in his eyes. The whole can be made very cheaply and does away with much of the present trouble in this line, besides making

an ornamental and attractive addition to the office furniture.—W. A. HESKARD, in *Dental Digest*.

The Composition of Expired Air and its Effects Upon Animal Life.

Billings, Mitchell, and Bergy have made a number of experiments upon animals and a thorough research of the literature of the subject, and arrive at the following conclusions, of which this is but a brief abstract:

1. Air expired by certain healthy animals and men contains no peculiar organic matter which is poisonous to the animals (excluding men.)
2. In ordinary respiration, no bacteria, epithelial scales, or particles of dead tissue are contained in the expired air.
3. The minute amount of ammonia in expired air appears to be due to decomposition going on in the mouth and pharynx.
4. The most important contaminations of the air of inhabited rooms are the particles of dust.
5. The effects of reduction of oxygen and increase of carbonic acid appear the same in artificially made mixtures as where the change in the gases has been caused by respiration.

The results of this investigation, taken in connection with the results of other recent researches, indicate that some of the theories of ventilation are erroneous, and that the problem of securing comfort and health in inhabited rooms require the consideration of the best methods of preventing or disposing of dusts of various kinds, of properly regulating temperature and moisture, and of preventing the entrance of poisonous gases like carbonic oxide, derived from heating and lighting rather than upon simply diluting the air to a certain standard of proportion of carbonic acid present.—*University Med. Magazine*.

BRIEFS.

Polish for Aluminum.—Dissolve borax, 30, in water, 1,000, and add a few drops of solution of ammonia.—*Bull. Gen. de Therap.*

Formaldehyde as a Disinfectant.—Use a solution of 1-250 or 1-200 for washing hands, instruments, rubber-dam, and other appliances.

Thiersch's Solution so much employed in surgery now, consists of one part of salicylic acid, eight of boracic acid, and a thousand of water.—*Lancet Clinic*.

Polishing Instruments.—Place a small quantity of oxide of zinc on a piece of thick spongy leather and rub the instrument on it, when it will soon take on a fine polish.

Treating of Rubber Dam.—After washing and drying, sprinkle Mennen's Borated Talcum over the surface and rub a few times between the hands.—*H. H. J., Dental Weekly.*

Borolyptol Successful.—I have used borolyptol in my practice for the past year with success, especially in cases of pyorrhea alveolaris, without injury to the mucous membrane.—*E. S. Talbot, Digest.*

How to Make Moldine.—From art stores can be procured clay, which, if mixed with glycerine, will make moldine or molding clay. It may be mixed with water, but that dries out quickly and requires a new mix for each use.—*Dental Weekly.*

To Remove a Gutta-Percha Filling from Root-Canal.—Warm a slightly barbed or notched wire and plunge it into the gutta-percha. The heated wire softens the filling, and with a rotary motion it can be readily removed.—*Dental Weekly.*

Heating Gutta-Percha.—One of the old large copper coins makes an excellent heater for gutta-percha. Place the pieces on the coin and hold it over a lamp. It will retain heat long enough to work a large filling.—*American Dental Weekly.*

Damages Can be Obtained for Unkept Appointments.—If a patient voluntarily fails to keep an appointment with a dentist, the damage for loss of time can be obtained by a proper presentation of the case before the proper tribunal.—*Dental News.*

To Succeed in Painless Dentistry.—The man who is to succeed in painless dentistry must not depend on one manner of practice, but must intelligently apply the best course of treatment to the different conditions presented by his patients.—*Dr. Tompkins, in Cosmos.*

Modelling Compound Die.—Modelling compound makes a good counter die. Take lower part of rubber flask, soften enough compound to fill it, place over it a piece of rubber dam and press die into compound, cool off and the counter is ready for use.—*Dental Weekly.*

Mix Pumice with an Antiseptic.—Mix the pumice with some agreeable antiseptic—listerine for instance—in an individual butter-plate, preparatory to cleaning. In this way the pumice can be more neatly handled, protecting yourself and patient from the dry powder.—*Dental Weekly.*

Acids and Cocain.—Since acid hastens decomposition of cocain we

must secure a neutral or weakly alkaline reaction at the field of operation, and must assure ourselves that bottles, mortars, cotton and anything which comes in contact with the cocain are not soiled with acids.—*A. Holbrook in Digest.*

To Scour and Polish the Teeth—I prescribe equal parts precipitated chalk and powdered cuttle-fish, carmin to color, orris root and fine sugar to sweeten. This mixture, when rubbed up and put through a No. 60 sieve, makes an excellent powder which may be used two or three times a week.—*E. S. Talbot, Digest.*

Separating Cast from Wax.—If in separating bite-plaster casts from the wax, the plaster teeth are broken and scaly, flow thin cement over the fragments left in the wax and replace the cast in the bite. When the cement hardens, separate carefully and the cast will then be perfect.—*Dr. B. H. Teague, Dental Weekly.*

Disk Lubricant.—Tell your readers to use paraffine instead of oil or vaseline or glycerin for lubricating paper disks, finishing burs and and stones at the chair. It is much neater as well as more efficient. Simply touching the revolving disk or stone with a block of the paraffine is sufficient.—*C. B. Rohlanp in Dental Weekly.*

How to Manipulate a Broach When Using Sulphuric Acid in a Root Canal.—You must never twist the broach in the canal. Work it straight up and down, using sulphuric acid and water, getting the probe in a little further and a little further until you recognize that it is just about as far as you would like to go.—*J. Foster Flagg in Items.*

Making Cusps.—There are many ways of making cusps for crowns, but the handiest and best thing that we have used is the steel die-plate of Dr. Mitchell, made by the Ransom & Randolph Co., of Toledo, Ohio. There are thirty-six shapes in it, and each is beautifully finished. A solid piece of gold can be laid on it and swaged into solid cusps.—*Amer. Dental Weekly.*

Removal of Teeth from Rubber Plates by Boiling.—Instead of holding the plate over a gas-jet until the teeth can be prised off, unpleasant odors may be avoided by boiling the plate for a few moments when the rubber will be found yielding, and by grasping it with the pliers the rubber may be sprung from the teeth, and a few repetitions will complete matters.—*Dental Weekly.*

To Sharpen Hypodermic Points.—First pass the cleaning wire through so that it protrudes at both ends of the needle. Take a corundum wheel, and with the engine grind off the point of needle with the wire at same time. The wire can then be pushed through from the other extrem-

ity, carrying all the debris with it. Thus the needle will be perfectly clear.—*Dr. F. B. Spooner, Digest.*

An Efficient Chisel.—A chisel in a cone-socket handle of the engine mallet will be found very convenient in many cases for cutting enamel walls for entering cavities. The rapid strokes of the engine mallet enable you to take small particles off at a time and yet accomplish the work rapidly. In many cases it is less painful to the patient than the use of either burs or hand chisel.—*H. R. J., Dental Weekly.*

Cause of Flaking of Porcelain on Porcelain Crowns.—Many of the failures with porcelain flaking off the metal of the Downey crowns at the cervical margin are mostly due to the band being too thin. The best way to avoid the flaking or fullness is to cut down the anterior portion of root, which provides more room for the band and porcelain and gives a degree of thickness that assures ample strength.—*Dr. Hertz in Cosmos.*

Gold in Amalgam.—In adding crystal gold to amalgam, it has been my practice to put in the empty mortar the whole amount of gold to be used, and to add to this at once the whole amount of mercury thought to be required to amalgamate the gold and alloy; then, adding the alloy, amalgamate the mass as usual. I have never found an amalgam alloy that was not improved in the using by the addition of gold.—*W. W. Coon, in Cosmos.*

Do Not Use Too Thin Gold for Caps.—I think, a common error on the part of practitioners to select a gauge of platinum or of gold too light,—as high as 30 of the standard gauge. That is extremely thin. It does not allow of feathering the edge and of much polishing without penetrating the metal itself. Twenty-eight standard gauge I regard as a good number for all caps, whether for the Richmond or for the Downie crowns.—*J. C. Hertz in Cosmos.*

Little Corundum Balls.—Take an old bur, coat the end of it with shellac varnish, place on it a very small warm piece of a corundum wheel, place the bur in the hand-piece, revolve the engine slowly, and warm the corundum in a lamp flame. When it is soft, revolve the engine more rapidly, and mould the little ball on the bur by holding it between the thumb and forefinger. This will make the best finisher for cavity margins.—*American Dental Weekly.*

To Remove Hypersensitiveness of Dentine.—Place oil of cloves in the tooth on cotton; saturate a piece of cotton with sandarac varnish and pack it in the tooth, leaving it there five days, and repeating the operation; then apply chloroform to the cavity, on a pellet of cotton, for

three or four minutes. With thin spoon excavators you can remove all decay, nine times out of ten, without any pain. I have uncovered several pulps this way without the patient ever flinching.—*L. S. Goble, in Cosmos.*

Sulphuric Acid in Mixing Amalgam.—While attending the Blue Grass Dental Association, I saw a demonstration of the use of sulphuric acid in mixing amalgam. I have tried it a number of times and have secured good results. Take a five per cent. solution of the acid and pour on the amalgam for the filling: wash it thoroughly, then add the mercury, of which I think it requires less, wash it well and squeeze out the excess of mercury. The results will be pleasing.—*H. A. Smith in Dental Weekly.*

How to Remove an Old Filling Painlessly.—In removing a filling, which many consider a painful operation, much can be done for the patient. A sharp, thin, square-edged drill should be used to drill an angle whose apex will not endanger the tooth-pulp. After snapping out the angular piece, proceed as before until the filling is out. Under no conditions I have ever yet seen was it necessary to use a bur, and I think such dentistry barbarous. A cold sweat breaks out on me by just thinking what I once endured in that direction.—*L. S. Goble, Cosmos.*

To Rid Gold Scraps of Base Metals.—When working on a fusible alloy die, there will always be danger of getting a little of the alloy in the fillings and small scraps. Such, of course, if melted up with the gold, will make it very brittle and give a great deal of trouble in rolling and working the gold afterwards. In order to obviate such annoyance, I boil all suspicious filings and small scraps in three parts of hydrochloric acid and one part of water for about fifteen minutes, then wash well with water to remove the tin, etc., that is now in solution.—*J. S. McDonald, Cosmos.*

Cause of Infection from Tooth Extraction.—Infection does not come so often from the forceps as from the tooth to be extracted. This tooth may have been aching several days, and has been so sore. No thought is taken of this, however; the tooth is grasped with the forceps which is shoved with a herculean effort down to the alveolar border, sometimes below it, carrying into the lacerated tissue whole colonies of microbes and septic matter. The patient returns in a few days with the jaw swollen, gums sloughing, and we wonder what the matter can be.—*H. H. Johnson in Dental Weekly.*

Formaldehyde in Solid Form.—If we make a very strong aqueous solution of formaldehyde, part of it slowly assumes the solid form and is precipitated. When this is dried and the pulp-chamber in a tooth filled

with it, after a time it is all reconverted into a gas and thoroughly disinfects the whole tooth. If there is an abscess at the root, by sealing in the solid formaldehyde with cement most of the gas escapes through the abscess, which soon yields to the treatment, which should be renewed every three days as long as required. An extended use has shown me the value of this treatment.—*W. Rollins in International.*

To Reduce Pain and Inflammation of the Root of the Tooth.

—In cases of pericementitis, also the pain occasioned by a setting of a crown or bridge, apply hot water to the gums and about the root of tooth or teeth affected. For the application of the hot water, use a two-quart fountain syringe, hung about six feet from the floor, conduct the water through rubber tubing to the mouth of the patient, deliver through a nozzle with an opening about one-twenty-fourth of an inch; water to be as hot as can be borne in the mouth. The water can be taken out by the saliva ejector attached to the fountain spittoon. This will in most cases give quick relief.—*E. H. Allen, Items.*

How to Make Excavators Cut Best.—Most of the excavators manufactured are thick and dull; they should be as sharp and thin as a new moon. I always take my excavators to the laboratory and make them thin. One can readily see the advantage. A thin razor-like edge will slide under the decay and peel it out in layers, where the other spoon will only cause pressure and scrape the surface. In every very sensitive tooth the direct method should be used as much as possible. In large cavities large, thin, sharp, straight spoon excavators should be employed, and by working on the line of circumference of the tooth one can often uncover the pulp with little or no pain, where a right or a left spoon excavator, bur, or other instrument would be torture because of pressure.—*Dr. Goble, in Cosmos.*

Necessity for Removing Organic Material from Root-Canal as Soon as Possible.—When dental decay has progressed so far into a canal as to infect the tubuli to much extent, surgical interference is imperative, and as much of that territory as possible should be removed. Immediately upon the death of the pulp, the protoplasmic contents of the tubuli are drawn, or exude from them by reason of their intimate relations with the tissues of the pulp. There is more or less of this material remaining in the tubuli, and the sulphur which it contains is active or contributes proportionately to the putrefactive processes in that vicinity. It is upon this idea that, having devitalized a pulp, the operator should cleanse the canal of all organic material as soon as possible; otherwise the fibrillæ contribute toward putrefaction and the whole dentine is contaminated.—*W. H. Whitslar in Items.*

EDITOR'S NOTES.

Individual Records.

THE minutes of the dental societies are recorded in a book kept by the secretary for this purpose. In this book we have a complete history of the proceedings and of the work done in the society each year. While complete as a whole it is faulty in so much that if an individual's record be desired, a long, tedious search is required. One has to begin at the beginning and search through the records to the end.

CLEVELAND

NAME.		COMMITTEES AND OFFICES.
Given		
College	Date	
Office		
Societies		
Residence		
Birth		
Town	Date	
College		
Title		
Societies		
Residence		
Birth		
Town		

How many society members realize how much or how little they have done in their society for the good of the profession. How does the work in your society today compare with that done years ago by our forefathers in dentistry? How does your individual record compare with theirs? Would it not be interesting to have such information concisely written out so that comparison could be made? This is a problem that Dr. Henry Barnes, of Cleveland, studied out and as a result he had three diagram record books made, one for the Cleveland Dental Society, one for the Northern Ohio Dental Society, and the other for the Ohio State Dental Society, presenting them to these societies at their last meetings.

when completed it will probably be the most complete record of the kind in existence.

The Ohio State Dental Society has advanced, from time to time, many new ideas that have subsequently been adopted by other societies, and this individual record book will mark another step in advance.

In our opinion it is a most excellent thing and every dental society in America should have one. In no other way can we get so complete a record of what Americans have done and are doing for dentistry. The thanks of the whole profession are due Dr. Barnes for these ideas. The books were gotten up only for these societies and not for sale. Dr. Barnes has the plates, however, and we presume that he will cheerfully grant the request of having other books made if various societies desire them.

CORRESPONDENCE.

A Presentation, and Return of Thanks.

CLEVELAND, O., Jan. 10, 1898.

To the Editor of the Ohio Dental Journal,

DEAR SIR:—Many of the Cleveland dental friends of Dr. W. T. Jackman, of this city, thought to make his heart glad, during his continued illness, by giving him a substantial Christmas greeting. The following presentation speech explains it all:

CLEVELAND, O., Dec. 25, 1897.

MR. DR. W. T. JACKMAN:

"The byes have tho't to giv yez a surprise and have taken this marnin' to do it. Now the things we've bro't yez is this: A book that tells all about the disases of the mouth, by a bye named Marshall, of Chicago. Another by a bye named Kirk, of Philadelphia, tells how to fix the ould taeth up so pape can ate. And another bye named Essig, tells how to make new taeth, for folks what ain't got any at all, at all. Then there is a little book by a little Cleveland bye, named Ambler, who's a buster in the workin' o' tin. And we tould the fellers in Toledo and New York to send yez the OHIO DENTAL JOURNAL and *Items of Interest*.

Now all these books tell about the troubles of folks, and shure yez have enuf o' yer own, so we tould the byes in New York to send yez somethin' lively and they said they'd send the *Cintury*, *Review of Reviews*, *McClure's Magazan*, not powder but radin' ye know, and the *Cosmopolitan*. O! yes, and to return to the troubles of folks, we paid for yer membership in the Cleveland Society for next year. And we've bro't a bokay for the wife, and candy for the kids. Sined by the BYES."

To say that the recipient was more than surprised puts it mildly; for with a heart swelling with emotion he said; "Thank the 'byes' for me and tell them they could not have bestowed such a magnificent gift upon a more unworthy object, neither on one who appreciates more keenly than I the kindly fraternal feeling the gift implies—a precious memory ever to be treasured in the storehouse of the mind. Also extend the thanks of Mrs. Jackman and the children."

Resolutions on the Death of Dr. T. W. Evans.

At a special meeting of the "American Dental Club of Paris" held at the office of its President, Dr. C. C. Daboll, on Saturday evening, December 11, 1897, the following resolutions were unanimously adopted:

WHEREAS: By the sudden death of THOMAS W. EVANS, M.D. D.D.S., Ph.D., which occurred at his home in Paris, Sunday evening, November 14th, 1897, this Club loses one of its most assiduous members, and the profession one of the most remarkable men that ever graced its ranks,—therefore be it

Resolved, That the "American Dental Club of Paris" deeply deplores the death of so eminent a colleague, who, as its first president, and as a fellow-member, ever alert to the interest of the Club and the profession, always commanded the profound respect of all.

Resolved, That we, as a body of American dentists whose lot by various circumstances has fallen in a foreign land, while gratefully acknowledging the hospitality of our sister republic and our gracious adoption by her people, feel it but just to acknowledge our gratitude to Dr. Evans, who, as one of the great pioneers of

the dental profession, has done so much to break down old prejudices and prepare the way, not only for us, but for every dentist whose heart is in his work, and whose object is to benefit mankind.

Resolved, That we regard his success in securing the recognition of all the nations of Europe, of the beneficence of dental science and art as first understood and practiced in America, as of the greatest importance to the public, as well as to the dental profession.

That influence was strongest during the first twenty-five years of his practice, during the plastic period of the evolution of dental science so especially active in America.

On account of his influence in the highest circles, the way has been made easier to convert conservative Europe to modern methods of conservative dentistry, and not only every member of this Club and every American dentist of Europe, but every native dentist as well has been benefitted by that influence. And, we believe above all, by the adoption of modern methods, such a stimulus has been given to *all* dentists of *all nationalities* as will one day render dental science a *universal* and not merely a *national* science, as it was during a great portion of Dr. Evans' career.

Resolved, That while we recognize the influence of others of his contemporaries, he played a principal role, owing to the peculiar position brought by his unparalleled success, such success being due to his personal magnetism, high-mindedness, affability, practical common sense and tact.

Resolved, That this Club regard the numberless honors conferred upon Dr. Evans by the various sovereigns of Europe as the just tokens of appreciation of the dental profession through one of its great representatives, and it is proud that he was an American, and proud he was a member of this Club.

And, notwithstanding his pecuniary success, his unlimited honors, and his long sojourn away from his native land, we know that while being faithful to his duties in foreign lands, his loyalty and affection for his own country never diminished.

He was first, last and always a dentist, and proud to be considered one, and despised that "*snobism*" which makes some men ashamed of the profession to which they owe all their success in life.

Resolved, That we believe the name of Dr. Thomas W.

Evans deserves a place with other great names in the history of the development of dental science.

Resolved, That our sympathy be extended to the relatives and friends of Dr. Evans; that a copy of these resolutions be handed them, and that a full record be made and preserved by the secretary of the Club in its procedures, and that a copy be sent to the dental journals of America for publication.

Resolved, That as a token of respect to our late confrere, the "American Dental Club of Paris" join in a body to attend the funeral.

JOHN W. CRANE,

ISAAC B. DAVENPORT,

J. H. SPAULDING,

Committee.

SOCIETIES.

Tri-State Dental Meeting.

THE next Tri-State meeting of the Ohio, Michigan, and Indiana Dental societies, will be held in Hotel Victory, Put-in-Bay, June 21-22-23, 1898. The meeting promises to be the best ever held in this section.

Northern Iowa Dental Society.

AT a meeting of the Northern Iowa Dental Society, the following officers were elected for the ensuing year: Dr. G. N. Beemer, President; Dr. A. N. Ferris, Vice Pres't; Dr. G. H. Belding, Treasurer; Dr. Wm. H. Steele, Secretary, Forest City, Iowa.

New District Dental Society.

THE Marion, Crawford, Wyandotte & Delaware Co. Dental Society has been organized, with the following officers: Pres't,

Dr. C. J. Nichols, Marion; 1st Vice Pres't, Dr. B. Q. Ayres, Upper Sandusky; 2d Vice Pres't, Dr. H. B. Hinman, Bucyrus; Sec'y, Dr. E. H. Raffensperger, Marion. The next meeting of the society will be held in Bucyrus, Feb. 17. All dentists living in these counties are invited to join.

E. H. RAFFENSPERGER, Sec'y.

Tenth Anniversary of the Odontographic Society, Chicago, Ill.

THE Odontographic Society of Chicago, the largest dental society in the United States, excepting the American Dental Association will celebrate its tenth anniversary, February 21st and 22d, 1898.

We shall spare no effort to make the event memorable in every respect, and to that end have planned a convocation which shall extend over two days and consist of clinics and scientific papers from men specially distinguished and representative in the science of dentistry.

You are cordially invited to attend and to present a paper, clinic or new dental appliance, as you see fit. The time is short for the extended preparations contemplated, therefore we are compelled to respectfully urge you to favor us with an early reply.

EXECUTIVE COMMITTEE,

C. E. BENTLEY, Chairman, 100 State-St., Chicago, Ill.

Odontographic Society of Chicago.

THE election of officers for the ensuing year resulted as follows: President, G. W. Swarts; Vice-President, H. J. Goslee; Secretary, F. H. Zinn; Treasurer, Geo. N. West; Member of Board of Directors, B. J. Cigrand; Board of Censors, E. K. Bennington, A. G. Johnson, F. E. Roach.

OUR AFTERMATH.

A MEDAL FOR HEROISM.—Dr. F. C. Wilson has been presented a gold medal by the Southern Dental Association in recognition of his bravery in saving the life of Dr. Jules J. Sarrazin, of New Orleans, while bathing at Old Point Comfort last August.—*Dental Weekly*.

DR. T. W. EVANS A DUKE.—It is not yet known how much has been left by the late Dr. Thomas Evans, says the *British Journal*. It has always been understood that he was exceedingly rich, and it is said that among the papers found in the Tuileries, on September 4, 1870, was the parchment of a dukedom conferred on Dr. Evans.

DR. C. R. BUTLER, MARRIED.—We have received cards announcing the marriage of Dr. C. R. Butler, Cleveland, O., to Mrs. Jane B. Eddy, of Fargo, N. D. The marriage took place at Fargo, January 6th, 1898. They will be at home, 334 Euclid Ave., Cleveland, after March 1st.

We join with Dr. Butler's friends, and they are many, in extending hearty congratulations and best wishes.

PROPOSED AMENDMENT TO THE PATENT LAWS.—Petitions are being distributed and liberally signed, asking Congress to pass the following amendment to the patent laws: "But no patent shall be granted upon any process or method of treating human disease, nor upon any process or method of restoring or replacing any lost part of the human body, except upon artificial substitutes, whole or in sections, which may be manufactured, sold, and delivered without the exaction of any fee, license or royalty, beyond the common selling price of the manufactured articles." This was suggested at the New York State Dental Society and several other State societies have appointed committees to assist in getting the measure passed. We hope to see it become a law.

PREHISTORIC DENTISTRY.—The January *Century* contains an interesting article on recent discoveries in Copan, C. A., written by George B. Gordon, the explorer. Speaking of skeletons discovered, he refers to the ancient custom of adorning the front teeth with gems inlaid in the enamel, and by filling. He says: "Although not all of the sets of teeth found had been treated in this way, there are enough to show that the practice was general, at least among the upper classes; for all the tombs opened, from their associations with prominent houses, seem to have belonged to people of rank or fortune. The stone used in the inlaying was a bright green jadeite. A circular cavity about one-sixteenth of an inch in diameter was drilled in the enamel of each of the two front teeth of the upper row, and inlaid with a little disk of jadeite, cut to a perfect fit, and secured by means of a bright red cement."

A GEM FOR EDITOR BEERS' "ADVERTISING" COLUMN.—The following is clipped from a Columbus, O., daily paper: "About four o'clock last evening a large crowd gathered in front of the City Hall building, where lay on the

pavement a well-dressed middle-aged man, apparently going through the last agonies of death. Patrol No. 1 was called and the man removed to the hospital. A hasty examination was made and it revealed the cause of his suffering, due to an acute attack of gastritis. It seems the poor fellow had for a long time suffered from sore and ulcerated teeth. So sore were his teeth he could not bear to take the softest food in his mouth without suffering great pain. In the morning he had visited the well-known dental firm of Drs. Robinson & Cherryholmes and had his offending molars removed, and in their stead had them insert their famous crown- and bridge-work. A little later he visited a well-known restaurant and proceeded to make up for lost time. His appetite was so ravenous and his teeth cut and ground his food so fine and so quick his stomach so unaccustomed to food, intense inflammation of the lining membrane of the stomach followed. At last accounts the man was doing well, but the attending nurse was having trouble limiting his food supply."

ANOTHER NEW DENTAL JOURNAL.—Some weeks ago we announced the appearance of *Catching's Dental Weekly*, and now *The Indiana Dental Journal* Vol. 1, No. 1, comes to hand, published at Indianapolis, with Dr. George Edwin Hunt, editor. The first issue is filled with interesting material and presents a very creditable appearance. We bespeak for the *Journal* a successful future under the management of one so capable as Dr Hunt.

Of course, you know Dr. Hunt. Yes, Dr. George Hunt. Yes, he's that Indianapolis, Indiana, Indian. Certainly he knows how to hunt, and he's after subscribers already. No still-hunt about it; Brother George is not built that way; he'll make himself heard all right. When will he be 'ere? Just as soon as possible. Escape? What! with Hunt hunting in the west, and Catching catching in the south? You can't escape. Better follow the example of the bears when they heard that Bill Greaser was hunting in their territory. What did they do? They simply cried, "O Lord! there's no chance of escape now," went and knelt down when they saw him coming, and said, "here we are, Bill; we give up; we'll subscribe to anything you ask." What did Bill do? Why that just suited Bill, so he not only gave them their liberty, but so much good food they couldn't digest it all.

THE CHINESE PHARMACOPEIA contains many peculiar remedies. Snow-water is supposed to be good for worms, while hail-water is poisonous. For eye-troubles the excrescence of bats is recommended. Amber is nervine. Ink is a diuretic, and gunpowder is a vermifuge. Benzoin is good for stomach-ache. It is much adulterated, but there is a sure test. If real, its fumes will charm rats out of their holes. Wheat bread is prescribed for a variety of complaints, and bread-pills are an old remedy with Celestial doctors. Verdigris is good for skin-troubles. Ambergis is a substance coughed up by dragons, and is excellent for healing. Plasters of elephant hide are useful for wounds that heal slowly. Dried scorpions and seed-pears cure a number of diseases. Ashes of paper are an astringent.

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CONTRIBUTIONS.

An Interesting Case of Sloughing of the Gums.

BY DR. H. B. HINMAN, BUCYRUS, OHIO.

ON August 7th, of last year, one of our local physicians called at my office with one of his patients whom he had been treating for sloughing of the gums, until the symptoms had become so alarming that he decided to turn the case over to me.

The patient had his teeth cleaned by another dentist some three weeks previous to his coming to my office. At the time they were cleaned, his gums were in a healthy condition, but they rapidly became inflamed after his visit to the other dentist, until, when he applied to me for relief, the gum septum had sloughed away to the process in the interdental space between every tooth in the mouth, and the festoon of the gum was also involved all the way around, on both the upper and lower jaw. The patient was unable to sleep the night before on account of the copious fetid discharge which dropped back in his mouth and filled his throat. He had also lost several pounds in the previous week and had some fever.

My treatment was to forcibly syringe out each interdental space, using pyrozone in my water syringe. I followed this by thoroughly cauterizing the whole diseased tract with a saturated

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solution of trichloroacetic acid, carrying it up to the process in the interdental space, by means of a few shreds of cotton wound upon a nerve broach. I then directed the patient to rinse his mouth thoroughly every half hour, using alternately pyrozone and euthymol and holding it in his mouth for three minutes each time.

When the patient reported on the following day the change for the better was astonishing, as well as gratifying both to his physician and to me. All purulent discharge had ceased; the patient had rested well during the previous night and felt much better. I pursued the same treatment as before with the exception that I used tincture of iodine instead of trichloroacetic acid this time. On the two days following this I used merely the pyrozone, he, in the meantime, using the mouth washes regularly. He was then called to another city and I referred him to a dentist there, with directions to have the treatment continued for a few days. He was very busy, however, and, as his gums gave him no trouble, he neglected to do this. When he returned a week later, his gums had assumed their normal condition and have since given him no trouble.

I have no doubt in my mind that the condition was caused by infected scalers, and it should be a lesson to us to always sterilize thoroughly all instruments used in and about the gums.

That Broken Block.

BY DR. C. W. BARD, SLIPPERY ROCK, PA.

WE find it when we least expect it; it mars our work; and patrons object to it; it ruffles our temper; cheerfulness, sunshine, kind words, are conspicuously absent by its presence.

One of the most aggravating things in the laboratory (for those who do rubber work) is to open a flask and find one or more gum sections fractured. I offer the following suggestions, not only in compliance with Dr. Coates' request, when he says: "brethren, tell us some of the little things you do," but also that those dark gloomy days (from the broken block) will be less frequent.

It is a little thing to bevel our gum sections and wax only to depth of bevel. It is a little thing to cleanse perfectly the

labial and buccal surfaces after case is waxed. First, with benzine; second, with soap and water; and finally with alcohol, for the least particle of wax remaining on those surfaces will become absorbed when investment is heated, leaving your blocks without support, and fracture from pressure is the result.

It is a little thing after removing wax from investment, to place the two parts of flask together, and thereby learn in what way they close with the least resistance. Apply this knowledge in closing the flask when rubber is packed. Try these few suggestions and you will be agreeably surprised with the result.

"Think naught a trifle, though it small appear! Small sands make the mountain, moments make a year, and trifles, life."—(Young.)

To Keep Water Warm.

BY DR. F. H. HOOD, MORENCI, MICH.

To keep water warm for use at the chair at all times, a small bracket may be made, large enough to hold a wine glass filled with water, and fastened to the wall at any convenient place.

Under this, on another bracket, place a small kerosene lamp which will keep water warm at a cost of about one-eighth of a cent per day.

Peculiarities of the Left Side of the Jaw.

BY L. P. HASKELL.

IN 95 per cent of mouths there is more depression upon the left side of the upper jaw in the region of the cuspid tooth, than upon the right.

The alveolar process is shorter on the left side than upon the right, so that if the artificial teeth are set parallel with the jaw they will be short on that side.

In a large majority of cases the lower teeth are higher and more prominent in the region of the cuspid tooth on the left side than on the right.

In very many cases the left side of the lower jaw is farther from the median line than the right side.

Operators assert there is more decay of the teeth on the left side of the mouth than on the right.

Who can give a tangible reason for these conditions. So far as artificial dentures are concerned they must all be taken into account.

Think for Yourself.

BY DR. D. V. BEACOCK, BROCKVILLE, CAN.

OUR modern modes of living are very destructive of health. Physicians tell us that eighty-five per cent of mankind are sick and they know it, and that scarcely any one is what you may call perfectly well. The mad rush of life and irritability of the times have led to nervousness and consequent injury of the body. Pure foods are not properly selected, adulterated foods are increasing every year; and our bodies are actually starved. Improper methods of cooking, wrong habits of daily life and the lack of association with our great mother, nature, have made the existence of every man and woman a struggle, rather than a pleasure; and the seemingly healthiest may be dead and buried in a week. Our race has degenerated physically. Men and women should try and get back to the original model of nature. There are laws of life and health. Every disease must have its cause and natural cure. Medicines, except in very rare cases are always enemies of the body.

To every being that is born into this world healthy and vigorous, a limited amount of vital energy is given at first, as a stock in trade, to carry him through this life, and while under ordinary circumstances, and in the usual states and conditions, we can do but little to add to it, we can waste it lavishly in aimless and unprofitable operations and useless exertions. Nature may be said to keep an account current, look out and not overdraw your account, for she is a stern creditor and makes no mistakes in her book keeping. Look around you and see people dying every day, not from any immediate causes; oh no! but from the slow results of colds, malarias, overstraining of nerves, and the too prevalent abuse of the digestive powers, from over-feeding, laziness, dissipation, and a hundred breakings of the laws of health which date

back ten or thirty years. Remember it is all laid up against them. They have been slowly adding to the mortgage until the mortgage equals their capital, and then the account is suddenly closed. Nature generally charges interest also, and takes it out of the principal on an advance payment. Let me here change the figure slightly, nature will allow you to overdraw the account many times—nay she will even allow you to use up eighty years of health in twenty-five years if you so wish to. But remember she never either forgets or forgives, or makes a mistake in her accounts, and when you have drawn all that will ever be your due, she point-blank refuses to honor another draft, not so much as the draft of a single breath, but like a relentless cashier, she closes the window in your face, and you are dead! When I say that nature never forgets, I mean that the Creator requires the payment of every evil and violation at your hands, no matter how small. Nature's laws are simply the Creator's methods of dealing with us. And old age is simply the harvest of what we sow in youth and middle age, and here let me say, there is no such thing as rewards and punishments, no forgiveness, no forgetfulness—forever and forever the exact consequences. This is the law of nature in the physical world, this is the natural law in the mental world, and it is God's law in the moral world. This of itself ought to stimulate us to learn to think for ourselves and take the utmost care of our health.

Nature provides penalties, not remedies, there is no cure but in returning to obedience, the language of nature as well as of scripture, is the soul that sinneth shall—what? not take medicine and get well, but shall die, if wrong is done evil must always follow.

Nearly all the diseases that flesh is heir to, aside from those produced by parasites, poisons and injuries in general, are the terrible outcome of defective feeding. Whatever is convertible into its own substance, the system appropriates or uses, but whatever is not transformable, it rejects. Here lies the grand distinction between food and poisons, of use and abuse. Of the fourteen elements needed in the body and which must be supplied in the food taken into the system, those which supply the three great demands, vitality, strength, and heat; are phosphates which supply the brain, nerves and bones. Nitrates which supply the muscles with strength. Carbonates, supplying heat and fat. Now it

is a wonderful fact that a grain of wheat contains all the fourteen elements of which our bodies are composed, and in very nearly the exact proportion for the building them up. The nitrates are found in the outside shell which is always thrown away in white bread, the carbonates, in the main portion, constituting two-thirds of the entire grain, and the phosphates in the chit or germ. In fine white flour, the centre alone is used, while the best part is thrown away or fed to our domestic animals. How few mothers know that phosphates are demanded for their children; the result is that a large majority of them grow up with defective teeth, defective muscles, shattered nerves, etc., and all owing to the ignorance of parents upon the one subject of proper food. It is absolutely useless to try and supply their place with highly concentrated or manufactured phosphates. I remember hearing Prof. Mayr state before a large audience of physicians and dentists, "that you might pack children in a lime barrel, feed them on lime stew, or lime hash without effect, for the teeth will not take up a particle more. The lime has to be introduced through the proper channels and in proper form," for, said he "the digestive department is just as full of red tape as that of any government. All its supplies must take a certain well regulated course, otherwise they will not be accepted." What the people need is less medicine, fewer doctors, and more instructions in the art of preserving health. Hygiene should form a part of our school curriculum. Children should be taught the mysteries of their own bodies, then the future generation would have little need of drugs and patent nostrums, they would know what to do when assailed by sickness, instead of making a funnel of their throats to pour nauseous medicines down, thus making a drug shop of their over-worked stomachs.

I have read somewhere that Emerson said that "a sick man was a rascal!" I suppose he meant that no man had a moral right to be sick, as it is little less than criminal. Sickness is a crime against ourselves, against society, and against the Creator,* sickness is only suffering for violation and broken laws. And all diseases are only remedial processes of nature to try and effect a cure. Nature trying to eliminate morbid or poisonous matter from the system. Dr. Hall says "That it might be laid

* The late Henry Ward Beecher used to say that he believed the time would come when one would be ashamed to acknowledge that he was sick.

down as a self evident truism, that nearly all the ailments that afflict humanity, come from the impurities that enter into the vital circulation from what we eat and drink, thereby finding their way into every part of the tissues of the human organism. These impurities may come directly from the food and drink thus taken into the system when they are deleterious, or directly from the fermented and decayed residuum even of the most wholesome food which is retained in some portion of the intestinal canal, and then absorbed into the circulation after it should have been discharged from the "system." How would you expect a nation or individual to prosper, whose exports were constantly exceeded by its imports. Think for a moment of the appalling aggregate of over a thousand meals annually, at each one of them a small amount is consumed in excess of the systemic ability to digest, oxidize and assimilate; gradually the bowels become clogged, poisonous matter is reabsorbed, and neuralgia, headache, and low spirits intervene, the stomach being overburdened, it throws more work on the liver and it is unable to perform its functions properly, then it throws the extra work on the kidneys, and now they soon become deranged, and lastly the heart overtaxed, by redoubled efforts in pumping the blood through these organs, thus engorged and partially disabled. There results low spirits and a form of insanity termed melancholia, all caused by faulty metabolism and malnutrition. All substances remaining in the stomach undigested, ferment and act as toxic irritants, while the nerve centres hypersensitive from the effects of heat, heave with the throes of terrible convulsions. Fermentation always prevents healthy digestion and assimilation, and soon the mucous surfaces become so paralyzed that they lose their normal selective power, as usually displayed in health. These poisonous products and acid forming plants then begin to be taken up, and a partial paralysis of the surrounding parts affected. This brings about a dilated state of the blood-vessels, and stasis in them, the outcome of which is a peculiar hyper-nutrition, by virtue of which connective, and even epithelial tissue of a very low type are formed in excess. We need not be told that the weakest, most exposed, most abused and most used part or organ falls a victim, because the operative influence brings such part or organ into a state best fitted to take on diseased action.

Healthfully feeding these tissues which require nourishing

and starving those which have been over or unhealthily fed, will in time restore the equipoise of any unbalanced organism. Perfect health develops none but healthy physiological longings, but once derange the human machine, either by physical, mental, or moral disturbances, and pathological appetites, desires, cravings, and hallucinations are the result. One step in the wrong direction opens the way for a second, the third, and so on, till the human organism soon falls a victim to the disturbances of a multitude of deranging influences that result, if long continued, in fixing pathological habits of organs and tissue.

During the hours of repose the mucous secreted by the membrane, lining the whole alimentary canal accumulates in the stomach and intestines coating their walls with a thick, tenacious layer. Food entering the digestive cavities under these circumstances will become more or less covered with this tenacious coating and thus be for a time protected from the normal action of the digestive ferments. Moreover during sleep the stomach contracts so as to assume a somewhat tubular form, its lining membrane becomes somewhat puckered or thrown into folds, and as already stated, coated with viscid mucus. The stomach, then in its normal condition in the morning before breakfast, is not in a proper condition to receive and digest food. Now what should be done? take a tonic or a glass of whiskey, as is too often done? Nothing of the kind. A glass of hot water will wash out the mucous, partially distend the stomach, wake up peristalsis, and prepare the alimentary canal for the morning meal, add to this, when possible a little exercise on a wheel, to stimulate the circulation, and facilitate the flow of blood through the capillaries of the digestive organs, and we have a plan which will not only engender health, comfort and vigor, but will cure many cases of both atonic and irritative dyspepsia. This alone is worth more than all the so-called liver pills, tonics, nerve powders, or stomach bitters ever invented and costs nothing, and what is better than all, it leaves no after effects or drug poisoning, which I have always dreaded a thousand times more than the primary disease. Remember that all patent nostrums only serve to deplete the pocket of the poor deluded victim who makes an experimental funnel of his throat, to fill the pocket of the manufacturer who gulls him and then laughs at his dupe's unbounded credulity. It ought to be known, that hot water too, is a potent diuretic, stim

ulating the kidneys and protecting them from the irritating effect of scanty and highly concentrated urine. Even in jaundice and torpidity of the liver, hot water freely imbibed will stimulate the biliary function to healthy action, and the sipping of large quantities is often a simple and sufficient remedy; but unfortunately as I mentioned, this costs nothing, if it could only be dished up to the public in pills or bottles and labelled with some catchy name and sold at from fifty cents to a dollar, everybody would buy it, but this is a common sense remedy, and common sense is a rare commodity, and people when sick are hard to inoculate with sound common sense, and until some way is discovered for the accomplishment of that psychological feat, they will continue to run after every advertised remedial humbug. This is the class of dupes from which the patent medicine vender draws his enormous profits, like a bee in a garden of roses, they flit from one humbug to another, but unlike that energetic insect, they do not gather the golden harvest they are in search of—Health, it is always the other fellow that secures whatever there is of gold.

And now let us take a cursory glance at the lower five feet of the alimentary canal, the colon, Dr. Turner says “that in this lies the cause of nearly all human ailments. Here is the breeding ground and a fertile soil for disease-bearing germs, to be carried from the colon and emptied directly into the lungs, through the portal veins, lacteals and lymphatics, by way of the thoracic duct.” The question may be asked, why does this unnatural trouble arise in the colon of human beings. The horse or the ox promptly obey the calls of nature, and know no place or time, and are blessed with a clean colon, so are the natives of Africa. But the demands of civilized life insist upon a time and place. Business, etiquette, opportunity, and a thousand and one excuses stand in the way continually, and nature’s call is put off for a more convenient season.

Few people realize the real nature and danger of constipation, which is the cause of a large majority of human ailments. Many persons suppose because they have a daily movement of the bowels, that *they* of course are entirely free from that trouble, whereas it is well known fact that they may have this terrible ailment in the very worst stages with the colon incrustated on all sides, with impacted excrement of months standing, with only a small opening, or central channel for the daily discharges that merely ooze

through the illeo-cecal valve. This abnormal state of things long persisted in, results in partial paralysis of the cells of the follicles and villi of the digestive organs, so that the cells that take up food for nourishing the body lose little by little that selective power by virtue of which those products are only taken up that are required to support the tissues in a healthy manner. The impaired and partially paralyzed cells begin to gobble up carbonic acid gas, vinegar, and other deleterious elements. You must understand that it is by this selective power that the tissues receive their requisite nourishment, this power being impaired, these follicles and cells of the villi gradually begin to take on all kinds of deleterious matter, and after awhile the whole system becomes saturated with fermenting elements, and their products, carbonic acid gas, etc. It is this gas that is absorbed in the large bowel, which it so paralyzes that it loses its normal peristaltic power to pass the fetid matter along, and it remains there fermenting, decaying and paralyzing till the organ becomes filled with fermenting matter and jelly-like mucus. Could a person even in normal health be permitted to view with the naked eye the enormous quantity of fetid matter which is constantly carried about by him within the lower part of the bowels, all of which might be profitably dispensed with, he would be almost driven to loathe himself and marvel that he could survive a single day surcharged with such a frightful mass of putridity.

Dentists either are or ought to be well aware that fecal accumulations are often the cause of reflex dental disturbances. And I can always forestall an attack of dyspepsia by the subjective sensations in my own teeth rather than by any epigastric disturbances. And in case of my throat becoming sore have long ago learned that it is not there that I am to search for the trouble, but twenty feet further down the same mucous tract. It is only lately that physicians have come to recognize that putrefactive processes in the intestinal canal, play an important part in causing many diseases, the origin of which has hitherto been but little understood. How often do sudden deaths occur in individuals in apparent good health, where carefully conducted autopsies fail to reveal lesions that account for the sudden fatality. No doubt in most of these cases toxins enter the blood, by being reabsorbed from the colon, perverting and destroying its nutritive quality.

Now whenever we feel unwell, nervous, drowsy, cranky, snappy, tired, ill at ease, listless, bilious, etc., instead of having recourse to the following, as most of us are so prone to do in this our day of powerful sytomatic remedies, veratrum for the pulse, antipyretics for the temperature, pilocarpin for the secretions, morphia for pains, calomel for the liver, strychnia for the nerves, chloral for insomnia, all these agents which strike blows at the manifestations of disease and often lead to disaster by lulling the subject into a false sense of security. These remedies as often employed, only serve to hide the enemy's movements; in which case they may actually become the ally of the disease without even being suspected, Prof. Bruch says "it is better for the patient to suffer than have his life jeopardized by these remedies? which only obscure the real issue of the case." To silence or even muffle the alarm drums of disease, is simply to invite a conflagration, and this is just what is done when any of the above medicines are given to obtund the sense of pain.

Let us avoid all these, think for ourselves, use common sense at least by assisting nature, obey her laws, try rest, fresh air, sunlight, proper diet, baths, external and internal,* and exercise, and in my opinion there is nothing equal to the wheel, for the dentist especially, it is far in advance of anything that I know as a health promoter, and best adapted to his special needs, giving abundance of exercise without fatigue. Why you need only just contrast wheeling with walking. Suppose that a man walks a mile, he will take on an average over 2,000 steps, at the same time bear in mind carrying the weight of his own body at every step, now when he rides a wheel, he will only make about 600 steps, at the same time requiring less force, and has no weight to carry and gets over the same ground in one-third the time.

Exercise on a wheel brings into action certain muscles that have lain almost dormant for years, increases the circulation, adds glame to the whole system, fills the capillaries with blood by forcing it to the surface of the body, stimulates the vicera to increased action, thus greatly increasing peristaltic motion of the bowels, increasing and strengthening the abdominal muscles as well as the lower limbs, by forcing them or compelling them to draw more nutrition to themselves, for it is a well known fact

* For an internal bath, use rectal injections of hot water not less than from one to three or even four quarts.

that nutrition is drawn into any part of the body in proportion to the amount of movement of that part. Here we see the great benefit of plenty of exercise in keeping the body strong and healthy. Again, passing through the air on a wheel so swiftly exerts an exhilarating influence, causing a glow of gladness to overspread the whole body, suffusing the cheeks with a roseate hue of health; fills the lungs with pure air, oxygenates and purifies the blood, it expands the lungs by deeper breathing, thus using up more oxygen, this creates a keen and healthy appetite, aids digestion, stimulates nutrition, favors metabolism, opens the pores of the skin, causing it to expel and thus help the other organs to eliminate effete matter and waste products, that if allowed to remain would clog up the pores and poison the whole system. Then a good bath with thorough rubbing will cleanse the body by removing the dead animal soil thrown to the surface, some of the water is absorbed and gets into the blood, thinning it and aiding it in its passage through the blood-vessels. A thorough rubbing, together with a little massage, assists the circulation and prevents embolism in the finer capillaries, light exercise with dumb bells and indian clubs are all excellent aids to health, but the wheel takes us into the country, puts us in close communion with nature, quiets the mind, soothes our ruffled tempers, takes us away from business troubles, strengthens the nerves, drives away all melancholy, prevents mental worry, cures insomnia, liver troubles, dyspepsia, and is a sovereign remedy for all neurasthenics, if persevered in and not abused.

And now gentlemen, let me again urge you one and all to use common sense, think for yourselves, if what I have stated is not true, buy a wheel and you will yet live to thank me for having brought this paper before you.

The Coagulation Theory.*

BY H. T. SMITH, D.D.S., CINCINNATI, OHIO.

Not long since I came across the following statement in the editorial pages of the *International Dental Journal*. It is headed "The Coagulation Theory," and reads: "The discussion

*Read before the Ohio State Dental Society, December, 1897.

on this subject, which has taken a wide range and claimed the interest of many minds for years, seems to be drawing to a conclusion, if the very thorough experiments of Dr. E. L. York are to be accepted. These investigations clearly prove that a coagulant such as carbolic acid does diffuse through dentin, notwithstanding assertions made to the contrary, and does not form an impenetrable coagulum at the orificial ends of the dentinal tubuli. These investigations substantiate those previously made, and, conjoined by those made by Dr. Bethel with silver nitrate, form a series of facts that clearly settle the question." I thought it might be interesting to look up the points at issue and to forecast if possible the conclusion spoken of and at the same time call attention to some points in the therapeutics of root-canal treatment as they occur.

The question originally at issue in the coagulation theory was whether or not a medicament which has coagulating properties, is used in the treatment of root-canals, so seals the mouths of the dentinal tubes as to prevent the further ingress of itself or of another medicament afterward used for antiseptic treatment? In other words, are carbolic acid and zinc chlorid self-limiting in their action, and, if so, are they contraindicated in the treatment of root-canals? It involves also this question, which is quite as important: Is the product matter from a putrefactive pulp capable of entering the body of the dentin, and, if so, is it also capable of infecting the pericemental tissues, causing what we recognize as lame teeth?

Looking into the first question, the diffusibility of coagulants, Dr. Harlan's experiments were probably the first made, and were about as follows: The pulps of freshly extracted teeth were removed, the ends of the roots sealed, and the teeth planted in plaster of Paris. Cotton moistened with carbolic acid in the one case, and with wood creosote and zinc chlorid in the others, was carefully packed in the root-canals. At the end of forty days tests were made in the plaster of Paris for the presence of the coagulant, and none was found. When the essential oils, cloves, cassia, and eucalyptus were used, it was found after four hours that the oils had plainly penetrated the dentin. By adding carmin to the oils the degree of penetration was distinctly followed. When solutions of silver nitrate were used it was found not to penetrate the tubules to any extent, and it was classed as

self-limiting with the other coagulants. The silver nitrate furnishes its own stain, and the degree of penetration was easily defined in sections of the roots. In another set of experiments Dr. Harlan immersed the teeth in starch solution up to their anatomical necks, after treating the canals with coagulating disinfectants and iodine. The characteristic blue color did not appear in the starch solution, hence he concluded that the coagulants were a bar to their own diffusibility. We cannot but believe that these experiments were carefully made and the results accurately reported.

The other side of the question is best represented by the recent experiments of Dr. E. L. York upon the diffusibility of coagulants in dentin, to which the editorial quoted refers as those that settle the question.

Using a number of teeth with both normal and putrescent pulps, Dr. York prepared them about as Dr. Harlan did. He injected into the canal of one a ninety-five per cent. carbolic acid, which had previously been colored with a small quantity of fuchsin. The tooth was sealed and wrapped in moist gauze, and was kept at a temperature of 98° F. to simulate the conditions in the mouth. In about eighteen hours the carbolic acid had passed through the dentin, as shown in sections of the root. This experiment was repeated a number of times, so that no doubt as to the result was left in the experimenter's mind. In other experiments the teeth were suspended in water and the test for carbolic acid made with bromine water, when it was found that the carbolic acid had penetrated the roots in about eighteen hours. Next, in order to demonstrate that carbolic acid does not form an impenetrable coagulum at the orificial end of the dentinal tubuli with their albuminous contents, one of the teeth that had contained carbolic acid in its root-canal for seventy hours was used. The canal was dried and the saturated solution of sodium chlorid was sealed in it. The tooth was suspended in water, and after three hours the water was tested for the presence of the sodium chlorid, using a drop of silver nitrate. The result showed a quantity of silver chlorid thrown down, proving that the coagulum formed was not a barrier to the passage through the dentin of other medicaments used in root-canal treatment. He found also that carbolic acid placed on the white of a boiled egg shows marked diffusibility, from which he infers

that carbolic acid is not self-limiting in its action, but penetrates its own coagulum.

Now, here are two sets of similar experiments with exactly opposite results. Which are we to believe? Some one says that it is a question of veracity, but it seems to me that the always possible differences in the dryness and age of the teeth used, and the variations in the quantities and percentages of the solutions used, should be given full consideration in the results. Dr. Truman says the question is settled in favor of the diffusibility of coagulants. Hence it is still good practice to use carbolic acid in root-canals. There is, however, one point that the experiments do clearly show, and in this they have perhaps chief value. It is said that the essential oils are very much more diffusible than the coagulants, and for this reason they have a distinct advantage of the latter in certain instances of root-canal treatment; and perhaps the mistake is made when the question is not allowed to rest with this comparison, but is pushed to the ostracism of one or the other class of medicaments.

A few observations I have put down as they occurred in looking up this question. The first is the statement of Dr. Bethel about the use of silver nitrate. If applied without the use of cataphoresis it is practically self-limiting, and even with the aid of cataphoresis there is little or no danger of forcing the silver nitrate through the whole extent of the dentinal tubules and causing injury to the peridental membrane.

Another observation is the statement that capillary attraction does not come to our aid, as had been supposed, in the rather difficult operation of forcing chloro-percha and medicaments into closed tubes such as are most root-canals. Experiments show that capillary attraction only takes place in minute tubes that are open at both ends; therefore, the solubility of chloro-percha in oil of cassia and other of the essential oils is certainly to be taken advantage of by treating the canal, just previous to filling, with one of these oils.

Another observation is the radical statement I found, that the successful treatment of pulpless teeth depends first upon the exclusive use of diffusible disinfectants, and secondly upon the repeated and continued application of the disinfectant dressing for a considerable length of time. This statement excludes the use of carbolic acid, mercuric chlorid and other antiseptics, and

opposes the accepted custom of immediate root-filling, which is certainly good practice in many cases. And, finally, in regard to the future of root-canal treatment, I have only to say that whether or not the advances will be in line of mummifying pastes or chemico-metallic methods, or will remain a process improved along the present lines of practice—that of dragging out each particle of nerve-tissue to the end of the root and the end of the hour—it is difficult to say, but it is sincerely to be hoped that the improvements will be effected in the methods as well as in the medicaments.

DISCUSSION ON PAPERS OF DRS. M'LEAN AND SMITH.

DR. L. P. BETHEL, Kent, said that the subject was of great importance to dentists and he hoped that more exact results would soon be obtained. As to his own experiments with silver nitrate, they were not made with the view of determining the coagulable properties, but rather to determine the effect, on tooth substance, of nitrate of silver used in connection with the electric current. As to the statement in the paper regarding the use of nitrate of silver, it is true that a simple application will not penetrate to any great depth, but with cataphoresis 12 volts, for five minutes you will get penetration, and with greater current and more time much deeper penetration. He had made no experiments to determine the diffusibility of coagulants and non-coagulants.

He said he thought that those who had made investigations in this direction had done very creditable work, each in his own way, and had labored ardently to solve this question of coagulation. Yet, it did not seem to have been definitely settled. Were the methods faulty? In the main they do not seem to have been yet the results are varying. It is true they were not conducted in the same manner or under similar conditions, and this may have more or less influenced the results. He thought that experiments to be exact, should be made under exactly similar conditions and all from the same solutions. While the results of Dr. York seemed convincing, it was a question whether the results would be identical if the experiments were made in the teeth in the mouth, for the physiological conditions of a tooth in the mouth must be different from conditions found in an extracted tooth. He thought the subject might be settled, as many others.

are, by united effort. Let those who have experimented along this line, with the addition of one or two independent investigators if thought best, adopt certain lines and methods of investigation and each perform the experiments, then compare results. Investigations to be exact, should be performed in the mouth, if possible, then the teeth extracted and examined or tested chemically to determine the extent of penetration of the coagulants. If this could be done it seems as though more definite knowledge regarding the action of coagulants would be gained.

Dr. H. A. SMITH, Cincinnati, said that he understood professor Taft to say that when the pulp was removed from the tooth, the life of the tooth was entirely destroyed.

Dr. TAFT. It usually is.

Dr. SMITH said that the word "usually" knocked his objection out. According to the teaching of the New York school of histology, there is a reticulum of living matter in the dentin that preserves the life of the tooth. He believed that the pulp should be preserved when it was possible, but Dr. Ingersoll says that with a matured tooth it does not make much difference. For himself, however, he believes with Heitzman that the living reticulum is distributed widely through the tooth, and does preserve its life. He did not think the careful use of arsenious acid was dangerous,—the danger is from using too much. Dr. Hugenschmidt, of Paris, has mentioned a number of cases of alveolar abscess between the apex and neck of the tooth. This, if true, proves that there must be connection between the tubuli of the teeth and the dead pulp, and we must recognize the fact that the fibrillæ of the teeth distribute nutriment in the tooth-substance.

He did not see any particular advantage in the use of asbestos as described, and thought cotton or other substances would do as well to carry the medicaments.

As to antiseptics, there are many in use by different dentists, all of which, or most of them, apparently answer their purpose satisfactorily. Some dentists depend on one only, and others have several favorites.

Dr. W. I. JONES, Nelsonville, thought it looked as if the whole system of dentistry was based upon the coagulation theory, but could not understand, if this was so, how it was that so many different antiseptic preparations would work successfully. He did not believe that tests made outside of the mouth had any bearing

on practical results. We know that silver nitrate will make a coating on the dentin that will protect the tooth, but if this coating is burred off the tooth will be as sensitive as before. If we are to revise the practice of our profession in accordance with the results of these new investigations, it will be necessary that the investigations should be so thorough that their results will not be open to any doubt or uncertainty.

Dr. F. W. SAGE, Cincinnati, said that neither the use of silver nitrate nor of asbestos was original, but the combination of the two was original. The silver nitrate has the objection that it discolors the tooth. He thought that the application of sodium chlorid or common salt would lessen the action, especially if cataphoresis was used to drive it into the tubules. This use of sodium chlorid has not, so far as he knows, been referred to by any one. It would be much better if the profession generally would have a uniform practice in the treatment of root-canals, for then when a case presented for treatment one would know what to expect to find at the apex of the root and what to do with it. We do know, however, that when we drill into a dead root for the purpose of placing a crown, that we are liable to stir up a hornet's nest. This is because the spores or other effects of the former decomposition have not been fully removed, and when the drill lets air to these bacteria they are worked up and restored to a state of activity.

In a prize paper recently published it is shown that it is necessary to open up the tooth so thoroughly that every particle of septic matter shall be removed. If we can demonstrate that the use of silver nitrate will enable us to drill up into the root of a tooth without causing trouble, we shall have done a good service to the profession.

Dr. C. R. BUTLER, Cleveland, said, Suppose Dr. Sage or some one else should prescribe a method that would be accepted by this body; how many would use it in their practice? There are nearly as many modes of procedure as there are persons in practice, and the hope of uniformity is very distant. It would be a very good thing if such a recommendation could be followed, as it would leave less uncertainty about how a root has been treated, but as a rule we are so wedded to our own ways that we would not leave them.

In regard to the paper of Dr. Smith, it is a very concise review, with some little filling in, of the views of men who have been

accepted as authorities on the subjects of coagulants and the preparation of cavities and chambers of pulpless teeth. He was glad that so young a man had given us such a concise presentation of the whole subject, and we should accept this paper as a good basis for continued work in these lines of investigation. The results of the experiments made by different workers vary so much that their experiments must have been made under different conditions.

The idea that the clearing out of the pulp will end all trouble is like that of the surgeon who believes that to cut off a damaged limb would be the best way to treat the injury. Such radical surgery is not allowable if the limb can be saved; and so with the pulp of the tooth,—it is part of the organization and should be preserved if possible.

Dr. TAFT, Cincinnati, said that his statement was that if the pulp was destroyed the life of the tooth was usually destroyed sooner or later, but he did not say that the tooth immediately became a dead tooth. Sometimes the life of the dentine continues for years, but often it is lost soon after the extermination of the pulp. Of course the tooth, though dead, may be, and often is, useful for years.

Dr. HENRY BARNES said that Dr. McLean used silver nitrate and the oil of cassia. In such cases the silver nitrate was not necessary; the oil of cassia alone is better. In posterior teeth and those with tortuous canals nothing is better than silver nitrate for rendering the canals of a dead tooth antiseptic, but in the front teeth the discoloration which it causes is a fatal objection.

Dr. L. L. BARBER, Toledo, asked Dr. Bethel whether he did not consider the penetration of silver nitrate, used either with or without the electric current, to be due to the formation of new compounds with the contents of the tubules.

Dr. BETHEL. When silver nitrate comes in contact with albumin in the tissues, they unite and form albuminate of silver, the composition of which is not definitely known. When silver nitrate is used in connection with the electric current, there is probably an electrolytic action that resolves the nitrate into the elements which reunite in the tissues and we get the deposit.

Dr. H. E. DUNN, Warren, thought it very necessary to use dehydrating apparatus to dry the roots before other treatment; recommended Evans' "root-drier" for the purpose.

Dr. McLEAN said he had had but about ten years of practice, and was not skillful enough to cap an exposed pulp and preserve it. He usually removed it with the use of the ethyl chlorid spray. He believed that the more dentin is removed from the root-canal the better, as there is less septic material remaining; and when filled there is more probability of preserving the tooth. He did not think pulps could be removed as well by cocain as by ethyl chlorid, as the latter anesthetizes the pulp so thoroughly that there is no pain.

As to the variations in pulps and in the direction and construction of the canals, there are no two teeth alike, and we have to use our intelligence to recognize the actual conditions. He did not believe in the use of acids, as their action cannot be limited; the silver nitrate is self-limiting. The reason that asbestos is better for filling root-canals than other material is because the powder is so fine that we can get it to any point where a broach can be made to enter. Some one said that it was not necessary to place the rubber-dam in position when about to remove the pulp. In reply to this it is enough to say that it is impossible to find an aseptic mouth; not to place the rubber-dam would be to invite the entrance of septic matter into the canals, and would be an inexcusable act of carelessness on the part of the operator. As to the various modes of treatment, he did not care for the experience of others; what he wanted to know was what he could best do himself for the benefit of his patients.

Dr. H. T. SMITH, in closing the discussion, said that when the subject of treatment of root-canals was up for discussion before a local society in Cincinnati it had been decided that the canals were generally over-treated, and that when there was after trouble it was generally because of the condition of the tissues beyond the root-canal.

That Troublesome Nerve, or Painless Dentistry.*

BY W. D. SNYDER, D.D.S., SIDNEY, OHIO.

THE practice of dentistry has many perplexing questions, and is beset by many annoying criticisms. In the operating department there is no one thing that causes more worry, or tends to make prematurely gray those once raven locks, than that little anatomical mass of odontoblasts, blood-vessels, white and gray matter, commonly known as the "nerve of the tooth." It has been a theme for study for ages past by odontologists, histologists, and pathologists, college professors, and students. It seems to be uppermost in the mind of the patient as she sits in the operating chair. It is talked of in the home, at the club, and on the street; in fact, while it cannot strictly be said to be a figure in the public eye, it evidently is very much in the public mouth. It has many peculiarities and queer idiosyncrasies. Its lessons are many, and often difficult of diagnosis and uncertain of prognosis. Those lessons may arise from scores of different causes and the symptoms remain about the same. Just when we make up our mind that a pulp is so protected that it will certainly live, it will surprise us by passing suddenly into the great unknown. And after we have spent days and even weeks it trying to destroy its frail existence we find it still very much alive, and we may quote, "How many now are dead to me that live to others yet," etc. Different from most things according to the laws of nature, death does not always end the trouble with this little disturber of the household peace and professional friendship, but goes right on until it is wiped out of existence, literally torn from its habitation; its house thoroughly cleansed and disinfected, and a new tenant moves in that will be more compatible with the surrounding tissue. In dealing with a dead pulp it often requires more skill and better judgment than with one in its normal condition, for very often we find the mere opening of a pulp-chamber containing a decomposed nerve results in peridental inflammation and perhaps abscess. Nerve broaches here, either smooth or barbed, should be used with great care, even though the apex be not penetrated by the broach; too much

* Paper read before the Ohio Dental Society, Dec. 1897.

cotton wound upon it might act as a piston, thus forcing enough septic matter or driving enough of the gases beyond the apex to irritate the surrounding parts sufficiently to bring about very bad results. I somewhat question the use of hydrogen peroxid or pyrozone in such cases, especially if left plugged too tightly in the cavity; a more mild dressing of some good antiseptic would be preferable. Again, such cases are not always treated a sufficient length of time, and the roots are filled in a partially septic condition with equally unfavorable results.

There has been a great deal said and much written regarding the filling of root-canals. There are certain rules that must be observed, after which almost any material or method may be employed with a reasonable assurance of success. I have already alluded to the necessity of putting the tooth or root in the very best possible condition. The root-filling should be non-irritating, and one that can be inserted easily and perfectly to the apex. A very valuable quality for a root-filling to possess is ease of removal, in case of pain or inflammation requiring it. I remember reading an article not long since wherein the writer rather criticised the use of any antiseptic agent in a root-filling, claiming that such properties would sooner or later pass away, thus leaving the root in no better condition than though it had not been inserted. I am of the opinion that the use of an antiseptic in a root is of great value in most cases until after the parts about the apex, where the pulp has been dissected or torn away, have returned to their normal condition. Then it makes no particular difference if these properties do disappear, so the filling of the root remains. My method of filling root-canals is with common lime, mixed with water to a pasty condition with enough carbolic acid and iodoform well mixed with it to give it as much antiseptic and disinfecting qualities as possible. I have used this method for over three years and find it very satisfactory. As root-canal treatment and filling is not the subject of this paper altogether, we will pass to other conditions of "that troublesome nerve" that may have a claim on some of our time.

There is no operation in which error can more easily be made than in filling over a live pulp. There are always two points to be attained, viz, a good, substantial filling, for that is what is expected of us, and one which will not only guard the pulp against irritation, but will of itself be non-irritating. To be

able to excavate and fill a cavity without pain is very desirable, but within a fortnight to have that tooth begin to throb and jump is somewhat embarrassing, and results in a step backward in our very much desired popular dental education regarding the care of the teeth. No cavity, however small, should be filled without first having a coat of some good resinous varnish or non conducting tooth lining. Capping an exposed or wounded nerve is attended with doubtful results, however practiced. We have no evidencé that a wounded pulp possesses recuperating or healing power to any available degree, therefore we should be very careful in our operations lest in trying to avoid giving our patient pain we throw open the gates to predisposing causes and let in the very object we would shut out.

It is not the purpose of this paper to dwell at length upon the details of every-day scenes or to enlarge upon relations we as dentists bear to the public, nor are we prepared to give to the profession a panacea for all the ills of this troublesome nerve, but we are here to offer what we have gleaned from observation and experience and to open for discussion a subject, though it be old, that should be of great interest to us all. The writer thinks he has good reason to believe that some conditions connected with operations involving this troublesome member might be bettered; that popular dental endcation could be further advanced; that the dread of the dental chair and unfriendly criticisms largely diminished if more thought and more care were given to such operations.

Gold cap crowns or large pieces of bridge work are often placed upon stubs or badly decayed teeth with portions of pulp-tissue remaining that should be removed; pivot teeth are often set upon roots from which all the pulp has not been removed, or, if so, the root has not been put in the best possible condition. What is the result? Inflammation, pain, swelling, abscess, and a tirade of abuse heaped upon dentists and dentistry in general. There is only one way out of this trouble—cataphoric appliances, arsenious acids, nerve broaches, cotton, and medicaments of all kinds, good and bad, are on the market plenty and cheap. Select the instruments and medicine with which you succeed best, and work intelligently.

Is this an age of painless dentistry? I think not. Yet I am glad to note the fact that a great effort is making in that

direction. That dentistry is progressing there can be no doubt. Methods, means, and medicaments of no small value are each year brought out that redound to the benefit of both the public and the profession. The teachings of our colleges seem to be keeping pace with the times. The terms have in most cases been lengthened, the number of terms increased, and the faculties groomed and coached until they seem to be almost bubbling over with knowledge. Our dental literature, of which there is a fair supply, is teeming with good things. The signs then certainly point to the time when our fair patients will enter our sanctum arrayed in smiles instead of frowns, and depart with nods and bows instead of groans and tears.

Unfortunately this dreamed of time has not yet arrived, but we may approximate as nearly as possible that golden age by using to the best advantage methods and means within our grasp.

DR. HUNTER said he understood that the general trend of the papers this morning was upon the same subject. The paper dealt in facts which confront us, and it is the dealing in these facts which make us a profession. He read a letter from Dr. Wright in which he said, if it were not for "that troublesome nerve" the profession would not have entered the domain of pathology, anatomy, or histology. It is the wire that points us to the living organism, and makes it possible and desirable for us to study it closely. I am sure your paper will contain facts of importance and theories for correct practice, and regret that I cannot be with you to open the discussion.

DR. W. T. BORN, Kenton, had concluded that there were many things he did not know, and how to cap a pulp successfully was one of them. He prefers to devitalize; it is safer.

DR. H. L. AMBER, Cleveland, said that the question, "Was it alive or dead?" put him in mind of the joke an Irishman got off. He said, "If he could breathe without his breath he would not be dead," and if the tooth could live after the pulp was gone it was not dead. The idea that seemed to be expressed this morning was that the aim of the silver nitrate application was to stop up the canal at the apex of the root, but the truth is it coats the whole canal. One gentlemen spoke of using one to two grains of arsenious acid for devitalizing the pulp. The truth is one-fiftieth of a grain is as much as should have been used, and it should never be used in deciduous teeth. The acme of

methods of treating pulps and canal is the nitrate of silver treatment.

DR. H. E. DUNN, Warren, said there seemed to be uncertainty as to the action of arsenious acid on the teeth. How does it act, by limited escharotic effect? He had heard said it produces a strangulation at the apex; the fact that a portion of the pulp remains alive proves that it is by escharotic action; it does not penetrate far, and, if so, it cannot be hurtful in temporary teeth.

DR. GRANT MOLYNEAUX, Cincinnati, asked whether there was not albumin in the substance of the dentin; we have lime, the inert matter, and the organic matter. The combination of silver nitrate with albumin will produce albuminate of silver if it stands only a few hours. If the deposit is of albuminate of silver we do not understand its action. *

DR. J. S. CASSIDY, Covington, said that in case silver nitrate comes in contact with albumin there would be formed albuminate of silver, the combination of which with the moisture in the tooth would produce oxid of silver, which is what darkens the teeth.

DR. MOLYNEAUX said that was just what he wanted to bring out, and now the question was whether the albuminate of silver would give us the result that we expect from silver nitrate.

DR. DUNN said that a gentleman this morning suggested the use of sodium chlorid or soda after silver nitrate; this would produce silver chlorid, which would not darken the tooth.

DR. W. A. PRICE said, Not one-thousandth part of the silver put in the tooth under electrolysis remains silver nitrate. Oxygen goes toward the positive pole and meets silver as it goes in. As silver nitrate under cataphoresis it will not form a deposit against the wall of the tooth, unless just at that point it should meet the other atom which would be oxygen.

DR. AMBLER said, In the use of silver nitrate we try to make a deposit the whole length of the root-canal. If you use silver nitrate and know it is a good thing, then why do you use sodium chlorid to destroy that which you have already done?

DR. SNYDER said, We have had the subject of root treatment pretty well discussed, and he regretted that he had forgotten in his paper to mention anything in regard to silver nitrate, but had rather generalized the treatment of the pulp, wishing to

make a thrust at careless operators and manipulators. We all try for painless dentistry, but in working out our pet theories we fail to accomplish the desired end. When, for instance, the dentist puts a gold crown on the tooth and leaves a live pulp under a thin layer of dentin, we all know what the result is likely to be. The crown must be removed and the work done that should have been done at first. He was not anxious to be considered a nerve-killer, but we should all look to the probability of the future. He used arsenious acid. Every operation depends upon two things, proper instruments and proper use. Arsenious acid in his hands works well, but in other hands it might not work so well. Carbolic acid in treatment of pulp-canals is good. Whatever the action of silver nitrate should be, it had been a failure in his hands. He finds that the walls of the root-canals near the apex are nearly as sensitive after the use of arsenic as if the pulp were alive. Theories are numerous—not all are bad. We do not want to treat teeth allopathically or homœopathically, but rather eclectically.

Physical Changes that take Place in Tissue Under Pressure.*

BY W. S. LOCKE, D.D.S., CINCINNATI, O.

IN this paper it is not my intention to present to you a method of regulating, but if possible some ideas as to the application of force, the effect produced on the tissues of the mouth during regulating, and why we so often fail in our efforts to correct an irregularity.

We hear or read papers written by members of our profession introducing some method or appliances, showing illustrations and models of cases successfully carried through, and the paper will be so well written that the practitioner who has not had experience in this line is lead to believe that it is very simple and needs no study whatever. These papers are usually written by men who are well advanced in this branch, and they give you their advanced ideas, little thinking that but few dentists have any understanding as to the first principles of orthodontia.

It is no wonder then that we have so many failures when cases

* Paper read at Ohio State Dental Society, Dec, 1897.

are undertaken by operators who go blundering along, not knowing why they do this or that; not knowing the physiological changes that are taking place in the surrounding tissue, the amount of resistance and force necessary to remove a certain tooth, the distance it can be moved with safety within a given time, and last, but not least, they have no idea as to the position the teeth will occupy or the facial expression of their patient when the case shall be completed.

Before we place a gold filling in a tooth we have in our mind's eye the operation about as it is to be made. We know the amount of anchorage necessary to retain it in position, and we also know very nearly what the appearance of said filling will be. Now, why is it not possible to see into the future of a regulating case, as we do into the future of a gold filling operation? It is possible, but not without a knowledge of the subject at least the equal of that we have of other branches of the profession. With the proper knowledge it is now possible to correct almost every deformity.

It is supposed that in ancient times irregular teeth were less frequently found than at the present day. The supposed cause is that the ancient races were more uniform in size than those of the present day, and that the intermarriages of the different races of people, having widely different characteristics, were less frequent than now. It sometimes happens that one parent possesses a large frame with big jaws and teeth, and the other small frame with correspondingly small jaws and teeth.

The offspring may inherit the small jaws of one parent and the large teeth of the other, the result being dental irregularity. Sometimes the large jaws of one parent and the small teeth of the other will cause abnormal interstitial spaces between the teeth of the offspring. Now, if it is a fact that these abnormalities are becoming more frequent as time rolls on, it is necessary that our profession be abreast of the times and be able to prevent or correct such cases.

It is first necessary that we shall be familiar with the eruption and calcification of all the deciduous and permanent teeth; and in the young child many cases of irregularity can be modified or entirely prevented by the necessary treatment before all the teeth are erupted.

When mechanical force is necessary, the most important fea-

ture in order to be successful, is to know the physical changes that take place in tissues under pressure and the cause of such changes.

THE RESULT OF PRESSURE ON THE TISSUES.

When in the act of regulating, pressure is put upon a tooth to move it, the first effect produced is compression of the pericemental membrane on the advancing side of the tooth and a stretching of it on the other. In this compression of the membrane the blood-supply is shut off, and the nerves become irritated. The irritation causes the development of cells known as osteoclasts, the function of which is to break down and absorb that irritated tissue. On the opposite of the tooth quite the reverse is taking place. Instead of compression there is tension on the membrane. The osteoblasts have been developed for the formation of new alveolar process to close the space left by the tooth.

When a case is presented for correction, and after good impressions are taken, it is well to measure and learn the amount of space occupied by the irregular teeth, the amount of space left in the arch, if any, and the room they will need in their new positions. This can be done, and very accurately. We will take one of the most common of all cases. The eruption of a cuspid outside of the upper arch, with a little space underlying it between the lateral incisor and first bicuspid. The lateral incisor inside of the bite, with space between central incisor and cuspid, but not sufficient to allow it in the proper position. Measure the width of cuspid and lateral; add to that width about one-fiftieth of an inch (I might call it elbow room) for these teeth and each of the adjoining teeth, for it is impossible to leave them in the same crowded condition they were before the case was undertaken. The difference between that width and the space underlying the cuspid, and between cuspid and central, will be the amount of space necessary to provide for.

APPLICATION OF FORCE.

When force is applied to move a tooth, it should at first be light, as the exact amount of resistance it may give is unknown, and increased a little at each sitting, until the tooth is moving at the desired rate. Should the force be too sudden and too strong, there is great danger of setting up an irritation which would cause

the breaking down of all the tissues surrounding the tooth, even on the side from which the advancement has taken place, as the rate of absorption of process is far greater than that of its formation; besides, the absorption is more rapid at the neck of the tooth, where the pressure is the greatest, and tilting will be the result, which is also likely to cause strangulation and death of the pulp. Again, when force is applied too suddenly, it may move or make very sore teeth used for anchorage.

In applying force it seems best, where possible, to use the method that will give both positive and intermittent force, for when positive and skilfully applied there is no doubt about the distance or the way the tooth or teeth will move; and when intermittent, is productive of but little pain, no irritation, except at the point of pressure, and it allows the rebuilding of the bone and other tissue in the space just vacated. When constant force is used I find the rebuilding of the tissues far in arrears of the moving tooth, and it will become very loose and extremely sensitive to the touch. No attempts should be made to exert force other than in a direct line. You cannot shoot around a hay-stack, even if your gun barrel is bent, nor can you successfully push a tooth in a curved line with but one direction of force. Care should also be taken that the point of resistance from which we exert pressure, and the points of resistance and delivery of force, and fixed points, which means that rubber bands or appliances of any kind should not be used in such a way as to shift their positions and in that way change the direction of force.

CASE IN PRACTICE.

In the early part of August, 1896, the writer was called in consultation with a dentist who had attempted to regulate the teeth of a young lady, by the use of rubber bands. The case was an anterior protrusion of both the superior and inferior maxillaries.

The two first bicuspids of the superior maxilla had been extracted and heavy bands drawn around the first molars on each side and over the cuspid teeth, hoping to draw the cuspids back in that way.

The patient was given an appointment and dismissed; she suffered great pain until the day for her return, which was nearly a week, without removing the bands. At this time it was found that the rubber bands had slipped far up under the gums, almost

extracting both molars, and drawing them, together with the with the second bicuspid, forward, closing the space left by the first bicuspid. Great irritation had been set up, and all the surrounding tissue was fast absorbing, about half of the palatal roots of both molars were exposed, and the bite separated at least one quarter of an inch between the incisors.

It was thought best to give the case rest for a few days, that the inflammation might recede, and then push the molars and bicuspid back to their normal positions. This the dentist accomplished in about one month, at which time the patient was put entirely in my hands. Had his appliances been firmly and properly applied this trouble would never have happened. On September 2 I took charge, and completed the case December 22 of the same year, reducing both maxillaries as well as drawing the teeth backward into the proper position. The results of the rubber bands are still to be seen in the mouth and on the models.

METHOD OF APPLYING RUBBER BANDS.

While on this subject of rubber bands, a little method I use, when I find it necessary to apply them, for retaining them to the crowns of teeth, keeping them from slipping either up or down, is to tie a ligature around the neck of the tooth, place the rubber bands in position, carry the ends of the ligature through the fissure of the crown and tie them tightly to the ligature on the other side of the tooth.

In the positive method there are in use also many

APPLIANCES THAT DO MORE HARM THAN GOOD.

In one of our books of reference there is a drawing shown where a first molar and second bicuspid are banded with tube soldered to the buccal side of bands extending from the distal side of the molar past the mesial side of the bicuspid. Through this tube is run a threaded shaft to a cuspid tooth which is leaning forward. The intention is to draw the cuspid to the place of the first bicuspid, and at the same to force it into the socket. From my point of view this appliance will not accomplish what is claimed for it, and, in fact, will in most cases do that which is least desired. Instead of forcing the cuspid into the socket the cuspid will pry on the cuspid and molar, tilt and draw their mesial surface from their sockets.

Now, if the bands be soldered together and an eyelet be placed near the neck of the anchorage teeth, with the draw-bar attached so that it will be movable, and to an eyelet at the end of the cusp of the cuspid tooth, the force will be exerted the same on the cuspid, but only in one direction on the bicuspid and molar without prying them outward. There is in the same work another drawing where two laterals are being forced apart in the same manner. I tried this method several times, each with bad results, and the last time opened the bite to such an extent that the teeth had to be ground to bring the occlusion to the proper place.

A moving tooth will not always go in the exact direction intended, and it is best not to fasten too solidly to the anchorage teeth, for the tooth being moved usually holds the lever and is liable to do some damage.

If a cuspid is standing at the right angle and you wish to move it bodily, solder the tube to the cuspid anchorage and allow the anchorage teeth to hold the free end of the bar or the lever, as it were, the tooth will be then drawn bodily into position and cannot possibly rotate, tilt, or injure the teeth from which power is exerted.

It does not seem advisable to require a molar, and bicuspid to withstand the resistance of a cuspid, for while it will often accomplish what is desired, it is likely to draw them from their proper positions; and while they will usually return, if allowed to do so, at once, they will not be fit for anchorage for many months; while if a second molar is attached, or an appliance made that will utilize other tooth to assist, there will be no trouble. Place appliances on the labial side of teeth when possible, unless they are directed across the mouth, as the inner wall of the alveolar process is much more dense and will resist a greater strain than the outer wall.

In drawing a cuspid backward it seems best not to attempt to force it too hard against the inner wall until nearly back to the desired position, for the resistance is greater when against this wall, and it forces the anchorage teeth outward toward the outer and weaker one. When the appliance is placed on the outside the force is exerted in the opposite direction, throwing the anchorage teeth against the inner and more solid wall, and the cuspid the outer one, or directly backward; besides, the appliance is out of the way of the tongue.

CHLORO-PERCHA FOR SETTING REGULATING APPLIANCES.

In placing regulating appliances in the mouth, I have found it an excellent idea when bands are placed on the teeth to be moved to set them in chloro-percha instead of cement; the bands can then be warmed and slipped off at any time to make changes or to adjust the retaining appliances without any pain to the patient; and when bands are used around them for retention they are fitted so that they will slip in position before regulating, taking the impressions and soldering after regulating.

This is alluded to because all who have regulated teeth know how very painful it is to remove cemented bands or to fit retaining appliances after the teeth have been removed.

Since the publication of the paper written by Dr. Case on

IMPROVING THE FEATURES,

for the World's Columbian Dental Congress, on orthopedia, the attention of the profession has been detracted from the mere moving of teeth to, it might be said, deformities of the face, I have given this subject some study, and it is astonishing what results can be obtained. Not only have I seen results obtained by others, but I have the satisfaction of correcting some cases of deformities, changing and improving the features of the face to the perfect satisfaction of all concerned. In one case especially, the superior and inferior maxillaries were reduced, making quite a pleasant looking face out of one which had appeared both homely and repulsive. In the discussion following the paper read by Dr. Case the question came up as to whether or not the bone was actually moved or the roots of the teeth moved breaking down the tissue in front and building it up in the space left by the roots. At that time opinions were greatly divided. The few cases handled by the writer have been watched very carefully to note the changes which took place during the operations, and from what was observed I have come to these conclusions:

HOW THE ALVEOLAR PROCESS IS AFFECTED BY REGULATING TEETH.

When teeth are being moved forward, and all are moving at the same time by the exact same pressure, the outer wall of the process is carried bodily forward, there being no irritation whatever, except at the lingual cervical border, showing that a division of

the process is taking place at that point, the inner wall remaining in its original position, the space being filled with new tissue, leaving this wall much thicker than before. If the teeth are carried forward one at a time the process is then absorbed and replaced by new tissue. In retracting the teeth where all are carried together the outer wall is carried with them, while the inner wall is absorbed because of the resistance behind it. Should they be carried backward one at a time the outer wall of this process will not be carried with the teeth, but the new growth of bone will follow each tooth, leaving the process somewhat thicker.

When force is applied to the cutting-edge, say of a central incisor, and drawn inward the fulcrum is at the neck of the tooth, and while the crown moves in, the root moves onward to some extent, but where the crown is pushed outward the apex of the root usually remains stationary and the tooth moves in. A large proportion of those deformities which appear to be due to the protrusion or recession of the lower jaw will be found, after careful study of the face, that the chin is in its proper relative position to the molar prominences and the upper part of the nose, and that the deformity is due to an imperfect position of the supmaxillary bone. We cannot be too careful in the examining of these cases, and observe just where the deformities lie.

DEFORMITY CAUSED BY REGULATING.

Some months ago a lady presented herself to have some operating done, and a great depression of the upper lip was observed. The deformity was spoken of, and she informed me that she had her teeth regulated about a year before that time, and that before regulating the cutting-edges of the superior teeth closed just inside the lowers. On examining the mouth it was found that both inferior first bicuspidis had been extracted and the inferior centrals were drawn back, or rather tilted backward, under the bite of the superior teeth, leaving a deformity as bad no doubt as before regulating. The lady stated that no impressions had been taken before or after the operation, and that the teeth were extracted and the regulating appliances (which consisted of rubber bands about the teeth) were placed in position within a few minutes after she presented herself for treatment.

Now this goes to show that the mouth was not carefully

examined, much less studied, and that no effort whatever was made to better the facial expression; but the object was only to make the teeth occlude in the normal way.

Too much credit cannot be given such men as Drs. Angle, Case, Jackson and others, who have worked hard to build up this specialty and obtain the confidence of patients, while many others are unintentionally and unconsciously working to break it down.

DISCUSSION.

DR. H. A. SMITH, Cincinnati, in opening the discussion, said that in the first place he would take exception to the title of the paper. The changes which were treated of did not come under the head of physics. There is a tendency at present toward correct nomenclature. It is very desirable to call things by their right names, so we can know what is meant. Physics pertain to material things. It is the science of principles obtaining in inorganic nature. In dentistry we are not dealing with inorganic nature, and so the term is misused. Before the rise of modern science physics was made to include vital science, but more recently it is confined to inorganic matter. The writer should have called the paper "The Physiological Action of Living Tissues Under Pressure." The line dividing the physiological and pathological is very narrow. To produce any change in a living tissue we must produce irritation, and then we have hyperemia, which is pathological. The author says in a certain case the blood-supply is excluded. If this is so, the change would not be physiological; it would be death of the part. Then, to follow the point, the cells which he calls osteoclasts would show the effect of pathologic condition.

Another friendly criticism would be towards his misapprehension of the word absorb. He should say resorb. Absorb means to draw in, or suck up as by a sponge, or to take something in which is foreign. Resorb, on the other hand, means to take back; so, in vital action, to resorb is to take back again into the system. These differences in the meaning of words are important, as the careful use of words is always important when discussing scientific subjects. The tissue originally given out by the peridental membrane is taken back; that is, resorbed. Dr. Goddard, of San Francisco, in "The American System of Den-

tistry," says, "I think resorb expresses the idea more correctly. I presume we can say correctly that the deciduous teeth are absorbed." Herbert Spencer says, "The temporary organs serve their purpose for a while and then are resorbed."

Many men are doing excellent work on orthodontia, and while things go all right it does not make much difference whether they know much about the action of the tissues under treatment or not; but when anything goes wrong then the necessity for a deeper knowledge becomes at once apparent.

There is much said in the paper in regard to continuous pressure and intermittent pressure. He had been, so to speak, brought up on continuous pressure by the means of rubber bands, but in careful hands good results are obtained by both methods. The law laid down by Dr. Farrar was, "If you move a tooth a fraction of an inch at nine o'clock and a fraction of an inch at six o'clock you will not have irritation." Well, if you don't have irritation you won't have resorption.

The amount of resistance at the anchorage must be greater than the force necessary to move the teeth that are to be moved, but need not be much greater, and teeth should not be banded unnecessarily. Dr. Black says, "My conclusion is that it is the resistance of the peridental membrane that settles the amount of force necessary to move a tooth. When we make no progress in moving a tooth, the reason is that the peridental membrane has so much power of resistance that there is no irritation and no absorption of tissue." If some persons can bite with a power of one hundred and eighty pounds and others with only eighty pounds, this fact may explain why in some cases there is less effect produced by the same pressure in the effort at regulation than in other cases.

Instrument Nomenclature with Reference to Instrumentation.*

BY G. V. BLACK, M.D., D.D.S., SC.D., CHICAGO.

. . . A DENTIST needs some means of indicating precisely the forms of the instruments used in the operations he endeavors to describe, and especially is this badly needed in school work.

* Abstract of paper read before the National School of Dental Technics, Dec. 28, 1897.

So long as the teacher has no means of accurately designating the particular instrument he employs, so long will his manipulative teaching be vague and uncertain. . . .

The failure to appreciate instrument forms and the special usefulness of each form gives rise to great confusion in operative procedures. The disagreement as to method among dentists is unnecessarily great, and when such a degree of confusion exists only a very few of the methods can be the best. . . .

It can not be expected that this proposed scheme for the classification and study of instruments will be of special benefit to dentists now in practice. That is not its object. It is intended for school work only; but may in time spread to the general profession through the students who go out from our schools. . . .

CLASSIFICATION OF NAMES OF OPERATIVE INSTRUMENTS.

Existing names of operating instruments may be divided into order names, sub order names and sub class names.

An *Order name* is one indicating the purpose of their use, or answers to the question, "What for?"

The well defined order names are *excavators*, *pluggers*, *separators*, *scalers*, *finishing instruments* and *accessories*.

A *Sub-order name* answers the question, "Where, or how used."

A *Sub-order name* is often attached as a prefix to the order name, as *hand plugger*, *mallet plugger*, *push scaler*, *pull scaler*, etc. *Enamel Trimmer* is a sub-order of excavators. *Burs* belong both to Excavators and Finishing Instruments as sub orders, as *cavity bur*, *finishing bur*. The word *Bur* is properly a class name—they have no order name.

A *Class name* describes the point or immediate working part, as *hatchet* or *hoe*, descriptive of the blades of excavators, or the working point of pluggers, as *convex plugger*, *serrated plugger*, *smooth plugger*, etc.

A *Sub-class name* describes the angles and curves of the shank leading to the working point or blade, as *bayonet plugger*, *spiral plugger*, *contra angle hatchet excavator*.

In the common speech of the profession, these names have been habitually compounded. Sub-order names are prefixed to order names—as in *mallet plugger*, *hand plugger*, etc. Class names are prefixed to order names, as in *hatchet excavator*, *spoon excava-*

tor, *hoe* excavator, etc. Also sub-class names may be prefixed to either order or class names, or all these joined, as in *contra angle hatchet excavator*, or in *bayonet plugger*.

In all these compoundings, the order name is last, indicating the use or purpose—the sub-order name prefixed, indicating how or where, while the class name is descriptive of the forms of the working point, and the sub-class name the form of the angles and curves of the shank leading to the point. It should be noted particularly that these terms are applied to groups of operating instruments. They specify the kind of instrument but do not individualize the instruments of the group. These may vary indefinitely in the widths, lengths and angles of blades. For these differences we will propose other terms.

RIGHTS AND LEFTS.

There is a distinct division in operating instruments, known as *Rights and Lefts*. Among excavators we have two forms of rights and lefts. The *beveled* rights and lefts and the *lateral cutting* rights and lefts, or, true double plane instruments. The beveled rights and lefts are hatchet forms made rights and lefts simply by the form of the bevel of the cutting edge. . . .

LATERAL CUTTING RIGHTS AND LEFTS.

Double plane instruments differ essentially from the single plane instruments in that they are specially suited for lateral cutting. They are always made in pairs.

CLASS NAMES OF EXCAVATORS.

Hatchet, Hoe, Spoon, Discoids.—(Disc-like, circular.) The blade is circular in form, having a cutting edge extending around the whole periphery, except that portion by which it is joined to the shank. *Cleoids*.—(Claw-like—in the form of a claw.) Sharp pointed blades in the form of a claw, with cutting edges on two sides of the blade. *Chisels, Binangle Chisel*.—A chisel blade placed at a slight angle with the shaft in the hoe form. They are contra-angled.

SUB-CLASS NAMES.

Mon-Angle.—An instrument having one angle only leading to the working point.

Contra Angle.—The shank of the instrument is first bent

backward (from the direction of the cutting edge), and nearer the cutting edge another bend is made forward—this length forming the blade.

Binangle Contra Angle.—A contra angle formed by two angles as described under contra angle.

Triple Angle Contra Angle.—In an instrument of the angle of 12 centigradss or less (about 45 degrees).

A strict study of the subject from this standpoint develops the fact that we do not need more than three, or at most four angles. Now with each of these three or four angles we will combine one long blade of definite width, one medium length of definite width, and one short blade of definite width, stipulating that the lengths and widths shall be the same in each angle. This makes a set of hatchets—if three angles be used—of nine instruments, and a set of hoes of nine instruments—or eighteen instruments in all. These we may name the set of ordinaries. . . .

THE MEASUREMENT OF INSTRUMENTS.

In the measurement of instruments for the formation of formula names, first try the width of the blade in the V-shaped slot of the gauge, which will give the width in tenth millimeters, and set this down as the first figure of the formula. In this the tenth-millimeter is to be used as the unit. Next measure the length of the blade from the center of the angle to the cutting edge in millimeters and set that down as the second figure of the formula. In this the millimeter is used as the unit. Third, find the angle of the blade with the shaft and set that down as the third figure of the formula. In making this last measurement, lay the handle of the instrument on the main shaft of the gauge, parallel with the parallel lines, and with the point turned toward the small numbers of the circular head. Now move the instrument until the angle of the blade coincides with one of the lines graduating the circle, being careful to keep the handle parallel with the parallel lines.

If we have measured a hatchet and the numbers give—width, 12; length, 5; angle, 6, the formula name will read, "Hatchet, 12-5 6." If it be a hoe, the formula will be the same and we call the instrument "Hoe, 12 5 6," the class name always preceding the formula name. This distinguishes both the kind of instrument and the size and angle of the blade of each. . . .

FORMING INSTRUMENT LISTS.

We have now made out rules of nomenclature by which we may accurately designate individual instruments. I will now explain the scheme for grouping instruments in formula lists which serve to limit the number of forms and to bring those chosen into intelligible order. . . .

Ordinaries are the common forms of hatchets and hoes, many of which are found in every operating case.

Specials are those instruments designed for special acts in excavating, such as spoons, enamel hatchets, chisels, etc.

Side Instruments.—These are selections for some particular purpose, only one or two of which are wanted in the instrument set, and which it is not desirable to include in a regular formula list.

ORDINARIES.

After a long and careful study of the dimensions, proportions and angles of blades of the hoe and hatchet excavators used by dentists and generally on sale in dental depots, I am of the opinion that nearly or quite every dentist will find in the following formula list about everything he will want :

SET OF ORDINARIES No. 1.

14-6-6, 12, 18 and 23.

12-5

10-4

8-3

6-2

4-1

forty-eight instruments.

Formula lists for ordinaries will be given in this form. The first figure gives the width of blade; the second the length of blade; the third the angle of the blade with the shaft; and the additional angles used are given in the first line only, divided by commas. . . .

LIST OF SPECIALS No. 1.

Enamel hatchets 20-9-12 Pr. R. & L. bevels.

Enamel hatchets 15-8-12 Pr. R. & L. bevels.

Enamel hatchets 10-6-12 Pr. R. & L. bevels.

Spoons 20-9-12 Pr. R. & L. curved.

Spoons	15-8-12 Pr. R. & L. curved.
Spoons	10-6-12 Pr. R. & L. curved.
Spoons	20-9-6 Pr. R. & L. curved.
Spoons	15-8-6 Pr. R. & L. curved.
Spoons	10-6-6 Pr. R. & L. curved.
Gingival margin trimmers . 20 (95)-9-12	Pr. R. & L. curved.
Gingival margin trimmers . 20 (80)-9-12	Pr. R. & L. curved.
Gingival margin trimmers . 15 (95)-8-12	Pr. R. & L. curved.
Gingival margin trimmers . 15 (80)-8-12	Pr. R. & L. curved.
Binangle chisel	20-9-6. One instrument.
Binangle chisel	15-8-6. One instrument.
Binangle chisel	10-6-6. One instrument.
Straight chisel	20. One instrument.
Straight chisel	15. One instrument.
Straight chisel	10. One instrument.
Discoid	20-2-12.
Discoid	15-1 $\frac{1}{2}$ -12.
Discoid	10-1-12.
Cleoid	20.
Cleoid	15.
Cleoid	10—thirty-eight instruments.

This gives a list of thirty-eight special instruments. Several other forms might be added, but to me they seem unnecessary. . . .

SIDE INSTRUMENTS.

Side instruments should be made to definite formulæ, that they may receive definite names.

Other formula lists may be added when desired. This year I have used an additional list of long slender blades expressed thus:

Hatchets and hoes—12-8-12 and 23.
8-6.

The proper place to begin this teaching is in the operative technic class; and for this purpose the pupil should be required to obtain his cutting instruments in his freshman year. One of the first and most important steps is to give the pupil a good working knowledge of the value of the millimeter, of tenths of a millimeter, and centigrade angles. He should attain this in such degree that he will be able to cut bits of paper, or of some soft metal,

five, ten or fifteen tenth millimeters wide, or five or ten millimeters long with reasonable accuracy without the use of the gauge; and to form any given angle. In this study he must first work with the gauge or with the printed form. A very excellent instrument for this study is the Boley gauge, an instrument that is specially well adapted to measuring teeth, and many other things in school work and in the dental office. As this is being accomplished the instrument forms are presented one by one, as hatches, spoons, hoes, etc., and the mechanical features of each, the nomenclature of its different parts, and the relation of the instruments to each other explained. The capabilities of each form will be familiarized by exercise in their use in carving in bone, and forming cavities in teeth. In doing this, correct instrument grasps, and finger and thumb rests, will be taught. The pupil is then presented with the various sizes of each form and learns to distinguish them and to use their formula names.

In this way the pupil becomes fitted to enter the junior year in which this teaching begins to be put into actual practice in the mouth. Now a review of the instrument forms, their nomenclature, and the uses of each, is made in connection with the teaching of the preparation of cavities. In this the lecturer and the demonstrator at the chair become able to direct the student effectively, so that his use of instruments is begun correctly, and comparatively rapid progress made on right lines. This much neglected branch of operative dentistry, instrumentation, can now be taught effectively.

CORRESPONDENCE.

A Discussion or Correction.

I DESIRE to correct a statement in the report of proceedings of the Ohio State Dental Society meeting of Dec. last appearing in the Feb. issue of the OHIO JOURNAL and *Cosmos*. See the discussion of Dr. Hawley's paper in which I replied to a question of Dr. Todd. Dr. Todd enquired "whether a millimeter could be made to register low enough to work in series so that it would not effect the cataphoric operation." I am quoted as saying, "The lower the sensitiveness the less would be the resistance and

the less the resistance the more sensitive would be the instrument." This is clearly absurd when applied to different forms of the same type and does not convey the meaning intended, which was with reference to the relative sensitiveness and relative resistance of different types, not different forms of the same type. For example, my D'Arsonval instrument when reading in hundredths of milliamperes has less than one ohm resistance, while another type a zinc galvanometer having only one hundredth as great sensitiveness has over one hundred ohm resistance. Increasing the sensitiveness of either increases the resistance. For example, when the D'Arsonval reads in hundredths of thousandths of milliamperes it has 1200 ohms resistance. My discussion, whether quoted correctly or not, was intended to refer to some different types and not to different forms of the same type.

WESTON A. PRICE.

Powdered Tin.

EDITOR OHIO DENTAL JOURNAL:

Dear Sir:—In the January number of your JOURNAL Dr. Coates asks where powdered tin can be purchased. I have noticed this same question asked on several occasions and will say that it can be purchased of Merck & Co., New York. Any druggist can order it. Cost, \$1.00 per pound.

J. W. LEAHY.

ALL SORTS.

Troublesome Cases.

As we have frequently had cases of the kind, such as we propose to describe, and presume that other operators have had the same, we venture to offer to describe our mode of procedure, with the hope of aiding those to overcome the difficulties we had to surmount.

The case in question was one of the exposure of the nerve in the first right upper bicuspid, which was excessively decayed on its distomasticating surface. The cavity of decay was filled with hypertrophied gum, besides quite a large pedicle or opercula of the same morbid and

hypertrophied condition lying loose and flaccid on the buccal surface of the tooth, nearly obliterating a view of the tooth.

There was an excessive flow of blood at the slightest touch to the gums, which so filled the mouth as to conceal not only the tooth in question, but several teeth anterior and posterior to it. There was no possibility, in this condition, to make a devitalizing application.

Our first effort was to snip off with the curved blade scissors the pedicle of gum. Next we essayed to check the bleeding, first with hot water, and successively with perchloride of iron, carbolic and cautery, and afterwards with trichloroacetic acid, but these had but slight effect; there was a constant oozing of blood.

The cavity of decay was still filled with the hypertrophied gum. We could not use force to create an absorption of this, because of the exposure of the nerve, so that we had to proceed slowly.

We mixed equal parts of the acetate of morphia and powdered hydrochlorate of cocain (about as much of each as would lie on the end of the small blade of a penknife), with a drop of carbolic acid, and essayed to insinuate this paste in contact with the exposure beneath the gum tissue, which filled the cavity, after which we secured this from escape into the mouth with a small pellet of cotton.

At the next visit we found the gum slightly absorbed, so that we continued the same treatment, using a little larger pellet of cotton.

After two efforts more we could see the exposure, the gum having been cleaned from the cavity.

Applying the dam, we now were able to make the application of arsenic, the formula of which, by the way, we will give, as it has yielded to us remarkably successful results. Taking as much of the acetate of morphia as will lay on the end of the small blade of our penknife, with an equal quantity of the powdered hydrochlorate of cocain and of powdered arsenic, we mix these on a glass slab with a spatula, and by incorporating them with carbolic acid form a paste.

The nerve dies, or is killed by this application as quietly and as painlessly as an infant dropping to sleep, and this *in twenty-four hours*.

This application was made directly to the point of exposure and *slightly pricked in* which was evidenced by the flinching of the patient.

The paste was secured in position by a small wad of cotton, and the cavity filled over this with a larger wad, using the precaution to pack this larger wad towards the second bicuspid, so as to avoid all pressure against the exposed nerve.

When the case next presented, the nerve was found to be dead; but the gum at the cervical margins still remained tough and unyielding, so that it would have been impossible to make an application of the dam,

so that it would hug these teeth at their necks, and permit of a proper preparation of this important surface.

Our next effort was to wrap a piece of gilling twine or flax thread *twice around each bicuspid*, forcing these ligatures well up on the necks of the teeth, and then tying. A small wad of cotton was placed *in the interdental space*, when a larger wad was forced between the teeth and packed firmly.

After wearing this for two days, on the next appointment the dam could be nicely applied and all the surfaces clearly exposed. The dead pulp was removed and the cavity filled satisfactorily.

We would say, that in such cases we have found it preferable on opening into the nerve chamber of a tooth, *especially the molars*, to break through the septum of bone which separates the floor of the cavity from the nerve chamber, *with excavators* rather than with burs in the hand-piece of the dental engine. Because if thus accomplished the nerve chamber will be better defined, and the root canals can be clearer seen and better approached and better cleaned than by the more expeditious, but as not as good way, with the cavity burs.—T. F. CHUPEIN, *Dental Off. and Lab.*

A Substantial Porcelain Face Crown Without a Display of Gold.

In making lower bicuspid and molar crowns with porcelain faces, the effect of the facing is almost entirely lost, from the fact that the cusps show so much more than the facings. To avoid the display of gold, and to secure a neat, easily-made and substantial piece of work, the following method may be used. After preparing the root in the usual way cut back the labial or buccal side of the tooth as though you were preparing for a thick porcelain face. Make the band as for a "shell crown." After it has been properly fitted to the root remove it and cut away the labial or buccal side as you did with the tooth, leaving a narrow band at the gum-margin. Select a rubber tooth of the proper size and length to fit in the remaining part of the band, giving the proper articulation. Grind the shoulder off of the back of the tooth at the point where the pins enter; also grind off the heads of the pins. Next wrap the entire tooth (except the grinding surface) with very thin gold (or platinum), puncturing holes for the pins to enter and making a lap of gold on the back of the tooth between the pins. Then cut away the surplus gold beyond the end of the tooth and lay it upon asbestos and solder without investing. The tooth thus covered is placed in the band and soldered, after which the gold covering the face is cut away, making a crown with porcelain face and cusps.

The rubber tooth rests within a pocket of gold and does not rely on the pins for support. The gold being soft it can be closely adapted to the tooth, making a very neat and cleanly piece of work.

If it is desired, a Logan can be clasped between the pins of the tooth, before making the first solder, and secure a pin for the crown without any additional work.—H. R. JEWETT, in *Dental Weekly*.

Method of Removing Tooth-Pulp.

APPLY rubber-dam, wash out the cavity with warm water, then with pyrozone; next remove all debris and insert a small pellet of cotton saturated with carbolic acid, working it well against the exposed surface. Then take out ten minims of 4-per-cent warm solution of cocaine in the syringe—tell the patient it will be painful only for a short time—remove the cotton, apply soft rubber plug, pass needle through and well into the pulp, discharge some of the contents and leave the needle for a short time. After two or three minutes the whole pulp can be painlessly removed with a spiral barbed broach. Wash the chamber well with pyrozone, repeating until it ceases to effervesce; flush with 95 per cent. alcohol and dry thoroughly. Do not depend entirely upon warm air for drying, but use copper wire heated in flame of lamp also. Wipe out canal with fine broach, wrap with shred of cotton dipped in eucalyptus oil, pump in chloro-percha, insert gutta-percha point, and fill cavity permanently as desired. The pyrozone breaks up the blood and washes it out, and also penetrates the dental tubuli. The oil following, being a solvent for gutta-percha, penetrates the cement, and being followed by the chloro-percha must seal the pulp chamber permanently. In cases of severe hemorrhage, keep floating them with 95 per cent. alcohol until it ceases.—J. W. BEETHAM, in *Dental Digest*.

A Method of Crowning Roots Decayed Below the Gum Margin.

Dr. Ottolengui gives his method in the *Items* as follows: "First a properly fitting pin should be constructed by a method, devised I believe by Dr. F. T. Van Woert. A soft pine stick is trimmed to a shape approximately fitting the canal. This stick is next wrapped with thin soft platinum, the edges slightly overlapping. The stick covered with the platinum is pressed into the root, thus obtaining a sufficiently close adaptation of the platinum to the sides of the canal. The platinum is then withdrawn, removed from the stick, and made solid by melting into it scraps of clasp gold. If special rigidity is required, drop in first a Logan

crown pin, or a small piece of iridio-platinum, and then flow the gold between this and the outer layer of platinum. This pin will fit the root so that a minimum quantity of cement will be required for its retention, and of course "the less cement the stronger the joint." The next step will be to cut a piece of soft platinum plate, not too thin, to the general shape of the end of the root, and carefully make a slit in it for the passage of the pin. The pin is passed part way into this slit and then the two carried to the end of the root, when the pin is slowly pressed into the canal, gradually forcing its passage through the soft platinum, so that when fully in place it may be removed, bringing with it the platinum in proper relation for soldering the two together. This is accomplished with a small bit of twenty-two karat solder dropped on the pin near the cap piece and the two held over a Bunsen burner. The pin and cap being thus united, they are to be returned to the root. The cap is next trimmed so as to have exactly the proper circumferential shape, and is burnished tight against the root end. To prevent change of shape, more solder is next flowed over the cap so as to stiffen it. A thin ribbon of platinum is then wrapped around the circumference of the cap so as to form a cup. This is then invested and filled with twenty karat gold, after which the platinum is ground off along the sides, which are then beveled. When in place on the root the result furnishes a properly beveled end for the root, suitable for the reception of a crown.

Further procedure is simple and affords opportunity for accuracy. The solid cap is placed on the root and impression taken in plaster. The cap is removed, placed in the impression and when the model is made, the operator has a solid gold tooth end over which to fit his crown. For articulating-models, it will be best to take an impression of the opposing teeth rather than to depend upon a wax bite.

To place the crown in the mouth, the cap should be attached to the root first, and the crown placed after the first cement shall have had time to become hard.

For the anterior teeth, where it is desired to use a porcelain-faced band crown, after forming the platinum to the shape of the root canal merely close the lateral seam by running solder over it; then proceed as before. This will give the solid cap, having, however, the pin part hollow, for the reception of the pin which is to be attached to the crown itself. Where the canal is normal in size, use a square iridio-platinum wire for the pin of the crown, and form a square tube to telescope over it, and then use this tube as the pin of the cap for the end of the tooth."

BRIEFS.

Best Engine Band.—The most serviceable engine band is the steel spiral spring band.—*Dr. Teague, in Dental Weekly.*

Never Rub Amalgam; it dissolves too much of the tin with the mercury, and makes a weaker filling.—*Dr. Wedelstaedt, in Items,*

Amalgam Trimmer.—Dr. Heath advocates the use of a straight probe for trimming off the cervical edges of interstitial amalgams.

For Protection of Cement Fillings.—Until hard we have found nothing so perfect as the varnish which accompanies the Harvard Cement.—*Western Dental Journal.*

For Neuralgia of the Fifth Nerve butyl-chloral is said to be superior to chloral, although as a simple hypnotic for general use it is not so efficacious.—*Lancet Clinic.*

Pain from Eucaïn Injection.—The injections of eucaïn will induce more pain than cocain, because of the hyperæmic condition induced.—*N. S. Hoff, Dental Review.*

Solder to Match Color of Coin Gold.—Add one-tenth the weight of good twelve carat gold solder to scraps of coin gold; melt and roll out for use.—*American Dental Weekly.*

Glycerin Lubricant.—Glycerin is better than water to “wet” a diamond drill with, when cutting enamel or drilling into an artificial tooth.—*B. H. Teague, in Dental Weekly.*

Asbestos Plate.—You can buy at any hardware store a neat, round and cheap asbestos plate on which to put rubber when you are packing. Clean and convenient.—*Dom. Journal.*

Mental States and Disease.—That mental states, and not bodily conditions alone, are responsible for disease in a majority if not in all cases in which it exists.—*W. X. Sudduth, Med. Times.*

Green Gold.—Green gold is composed of pure silver one part and pure gold two parts. Dr. Mellotte says that he backs all teeth with it, and can solder it with 20-carat solder.—*Amer. Dental Weekly.*

Do Not Use Hot Instruments for Packing Amalgam.—There is no virtue in hot instruments, and no man can make a first-class amalgam filling with a hot instrument.—*Dr. Wedelstaedt, in Items.*

For Irritated Gum.—The transparent amber-colored oil-cloth of the drug-stores is a very serviceable material to put between the gum and irritating regulating fixtures.—*B. H. Teague, in Dental Weekly.*

Clean Your Hands Before Packing Rubber.—If your hands are dirty you will dirty rubber in packing sets, and the dirt remains, and even seems to penetrate deeper than the surface you wish to polish.—*Dom. Journal.*

Close Adaptation of Band Necessary.—If the attachment is to be secured by a band grasping the tooth at the cervical border, the one thing needful is a close adaptation of the band at the neck of the tooth.—*Dr. Tutt, Digest.*

Cocain for Hypersensitive Teeth.—When the sensation in a hypersensitive tooth is being complained of as unbearable, the application of one-tenth of a grain of the citrate of cocain will yield gratifying results.—*Dental News.*

Amalgam Stains Teeth of the Young.—Amalgam placed in the teeth of the young almost invariably stains them, and as far as the stain extends so far is the highest good of the teeth seriously impaired.—*J. W. Whitney, Stom. Gazette.*

Tin Objectionable as a Mercury Remover.—Mr. Payne objects to the use of tin cylinders for removing the surplus mercury, as it alters the composition of the amalgam on the surface, and renders it softer and more granular.—*Dental Record.*

Waste Receptacle.—Get in the habit of putting waste cotton, bibulous paper pellets, worn disks and ligatures into a small box, basket or vase placed on the cabinet, and stop littering the floor around the chair.—*Dr. Teague, in Dental Weekly.*

Varnish.—The term “varnish” is derived from the French *vermis* and Italian *vermice*. Sir G. E. Lewis says the word is a corruption of Berenice, famous for her amber hair, which was dedicated in the temple of Arsinoe, and became a constellation.

Finishing and Polishing Instruments.—After the instruments are tempered they can be finished on the lathe with an Arkansas stone, and polished with crocus, using three grades, coarse, medium and fine; use the first two grades on cotton buff wheels, and the last one on a cha-mois buff.—*W. H. Steele, in Dental Register.*

Tough Plaster Casts.—Plaster casts may be made so tough that they will bear the driving of a nail into them without cracking by immersing them in a hot solution of glue for a sufficient time to permit it to permeate the entire mass.—*Scientific American.*

Where Bands Need Not Extend Beneath the Gum.—In cases of recession of the gum from around the necks of bell-crowned second and third molars it is unnecessary to extend the band below the free margin of the gum.—*A. Jameson, Ind. Dental Journal.*

Uses of Cake Pumice Stone.—You can buy prepared square cakes of pumice stone which are very convenient for cleansing the hands, polishing dirt off tables, etc. The pumice block is a good thing to clean solid rubber before you pack.—*Dominion Journal.*

To Cut Rubber Dam.—To cut rubber dam with scissors, fold to four or five thicknesses and cut roll thus formed. By this means you can easily and quickly cut a piece of dam with scissors that it would be impossible to cut a single piece with.—*H. C. Hopkins, Dental Weekly.*

A Suggestion About Crown Setting.—Bevel the cervical edge of the crown on the inner aspect instead of on the outer and crimp it in to fit snugly against the root is good practice. Bathe the root in a silver nitrate solution before setting the crown.—*A. Jameson, Ind. Dental Jour.*

Care in Extracting Teeth.—Never extract a tooth, and particularly a lower one, without having a napkin in the mouth posterior to the tooth to be extracted. If you do, some day the tooth will fly down into the trachea and never stop until it finds a resting place somewhere along the bronchi.—*Amer. Dental Weekly.*

A Right-Hand Glove.—A right hand woolen glove will be found very convenient to mitigate the excessive heat when lifting the crucible from the fireplace with the aid of the spring tongs, when melting gold or silver before pouring in the ingot mould, or even when lifting a ladle of zinc or lead before casting a die.—*T. F. Chupein, Dental Off. and Lab.*

Chloro-Rubber.—When packing a case, there is nothing better than a chloroform solution of the rubber base, to be applied to the model. The pieces of rubber can thus be made to stick where they are placed, and the packing can be done almost to the nicety of wax. Keep the chloro-rubber in a metal screw cap bottle, such as come with some of the cements.—*Dental Weekly.*

How to Remove Crowns Set with Varnish or Gutta Percha.—Take a small medicine dropper, put a white cotton string or wick in it, cut it off even with the tapering glass end, then draw in a few drops of alcohol and light it. You have a miniature alcohol lamp, with a flame about the size of a pin's head. Heat the tip of the tooth and remove it.—*R. E. Payne, in Items.*

Pyrozone after Removing Salivary Calculus.—After the removal of salivary calculus and the polishing of the teeth, brushing the

gums and teeth with a pledget of cotton saturated with pyrozone (a permanent 3 per cent. solution of hydrogen peroxid) will complete the operation and insure the best results for personal appearance and comfort.—*L. F. Dolebare, Items.*

Care in Adjusting Crowns.—I care not how careful one is in taking impressions or how expert he is in the use of his instruments, in most cases when he gets a crown to fit as it should fit and as well as it could be made to fit, it is nothing short of an accident. The fitting of a band should be done on the root in the mouth so you can see the inside of it.—*D. A. House, Ind. Dental Journal.*

Important Principles in Bridge-Work.—From a mechanical standpoint, in constructing a bridge we must take into consideration three points, viz.: the piers or supports, the load or force they will have to withstand, and the strength of the material used with respect to the load. If we do not understand something of these things our work is empirical and not scientific.—*A. M. Tutt, Dental Digest.*

Watch the Interdental Space When Adjusting Crowns.—In crowns, aside from poorly fitted cervical edges, the greatest cause of uncleanliness is due to too little regard for the interdental space. Either the approximal surfaces of the adjoining teeth are carelessly ground away or not enough care is exercised in reducing the circumference of the root.—*D. A. House, Ind. Dental Journal.*

The Strength of Bridges.—The only possible way to find the strength of a bridge is by actual experiment, and inasmuch as no two bridges are the same in size or form, a separate experiment will have to be made for each structure. And so we conclude that there is nothing left for us but to have faith that when we construct our bridge no force that can be applied to it in the mouth will break it.—*A. M. Tutt, Dental Digest.*

How to Mix Amalgam.—I take a rubber-pointed pencil, a pencil that has a little rubber on the end; I drop my amalgam and mercury into the mortar and work it backwards and forwards with the pencil, then take it in my hand and knead it; I do not grind it with a pestle, for the simple reason that the more you grind it the more you grind the mercury into it; you take up more mercury than you would otherwise.—*Dr. Wedelstaedt, in Items.*

How to Use Thin Rubber Dam in Setting Bridge-Work.—Punch the requisite number of holes in the rubber at the proper points and then pass a piece of waxed floss silk through each hole, tying the two

ends of each piece at the edge of the rubber somewhere. The rubber is then adjusted and the bridge set. Before attempting to remove the rubber dam tear it through to the edge by pulling on the waxed thread.—*A. Jameson in Ind. Dental Journal.*

All Society Members Should be Active.—There must be leaders in every society, but it appears to me that in order to promote the usefulness of our dental societies so that every member may be interested and benefited, each one should be willing to assist in some way; that committees should be appointed to introduce new comers, and make them feel that they are welcome, and needed, as they are, for new blood is the life of progress.—*F. T. Bell, Review.*

Necessity for Trimming Teeth Correctly for Crowns.—If you do not have a tooth correctly trimmed above the neck you cannot get the crown to fit properly. Contouring, the proper knuckling of the crown, and the fitting of bands about the necks, are of vital importance to dentists, and some dentists ought to be ashamed of the kind of crowns they put on. It is a backset on crown work. They ought to wake up and try to learn how to trim teeth down.—*G. W. Schwartz, in Dental Review.*

EDITOR'S NOTES.

The Use of Slang.

SLANG must be an invention of the evil one, it creeps so insidiously into our conversation and the habit is so difficult to break. The habitual user of slang has reason to often feel mortified did he but realize how he makes himself appear before those whose regard he values. A man's conversation brands him as a gentleman, or the reverse to a degree which he regards the proprieties of speech. Admitting that the use of slang is so common that the habit may be acquired almost unconsciously, we do believe that bad manners follow slangy talk. Carelessness in speech begets carelessness in conduct. Furthermore, the loose, unprecise manner of expression of thoughts, which is so popular at the present day, has its effect in driving out the better and correct words and forms of speech, and the careless talker becomes unable to express himself in precise and proper words, being unfamiliar with their use. Slang is vulgar and disgusting

to people of refined tastes. The dentist should cultivate the habit of using good language for by his speech he shows to those with whom he comes in contact, the regard he has for the feelings of others. And the relation of dentist to patient is such that a lady of refined tastes hesitates to place herself in the care of a dentist who is careless in his speech and she concludes, therefore, careless in his manners.

One would judge, from the following examples, that the race has degenerated since the sixteenth century.

This is the way a poor, self-made man of that age, whose father could neither read nor write, expressed his thoughts to the world.

In the Merchant of Venice, Bassanio says:—

“ In Belmont is a lady, richly left ;
And she is fair, fairer than that word
Of wondrous virtues ; sometimes from her eyes
I did receive fair speechless messages.
Her name is Portia, nothing undervalued to Cato’s daughter,
Brutus’ Portia ;
Nor is the wide world ignorant of her worth,
For the four winds blow in from every coast
Renowned suitors ; and her sunny locks
Hang on her temples like a golden fleece ;
Which makes her seat of Belmont, Colchos’ strand,
And many Jasons come in quest of her.
O, my Antonio, had I but the means
To hold a rival place with one of them,
I have a mind presages me such thrift,
That I should questionless be fortunate.”

That is the Shakesperian version as told three hundred years ago. Listen to how it would be told in the enlightened nineteenth century :—

“ Antonio, old boy, down here at the Belmont there’s one of the smoothest girls you ever saw, and she’s dead-stuck on me. Her old man kicked the bucket, but he left her all his duff. She’s got all kinds of money, and she’s as pretty as a peach. Oh, she’s the stuff, you bet your life. There are a lot of duffers trying to catch her but she’s onto them ; they’re dead easy. Do you suppose they can get ahead of me ? Well, I guess nit. All I lack is a little mon, for I’m dead broke, and if you will lend me a hundred or two, so that I can do the thing up brown for Portia, I’ll eat my boots if she ain’t Mrs. Smith inside a month.”

The dentist should have a certain amount of dignity, should be well read, and possess a character that is above reproach. His very presence and conversation should have such an influence on

his patients that they will feel lifted up into a higher region of thoughts and aims than that in which some are tempted habitually to dwell. This he cannot do if he allows himself to become addicted to the use of slang, for it will drag him down to the level of common people. Watch yourself and if you find that you are using slang, break the habit.

New Publications.

ELEMENTS OF LATIN. For Students of Medicine and Pharmacy.

By George D. Crothers, A.M., M.D., Teacher of Latin and Greek in the St. Joseph (Mo.) High School; Formerly Professor of Latin and Greek in the University of Omaha; and Hiram H. Bick, A.M., Instructor in Latin and Greek in the Boy's High School of New York City. $5\frac{1}{4} \times 7\frac{1}{2}$ inches. Pages xii-242. Flexible Cloth, \$1.25. The F. A. Davis Co., Publishers, 1914-16 Cherry St., Philadelphia; 117 Forty Second St., New York City; 9 Lakeside Building, 218-220 S. Clark St., Chicago, Ill.

While this book is designed for medical and pharmaceutical students, it is adapted to the use of dental students as well. It presents within the briefest possible compass those principles of Latin etymology and construction which are essential to an intelligent use of the terminology of pharmacy and medicine. Special features of the work are that the simple sentence is used exclusively in the exercises; parts of the verb not essential to the study of pharmacy and medicine are omitted; the subjunctive present—in the Hortative or Jussive sense—alone is used; and there are two independent sets of exercises in each chapter—one pharmaceutical, dealing more especially with medicaments, the other medical and surgical, containing anatomical and pathological terms, and there is a chapter on prescription-writing. More than forty pages are devoted to detailed descriptive notes on the exercises, following which are tables of declensions and conjugations, a list of anatomical equivalents in English, Latin, and Greek, a table of Greek prefixes and suffixes, and a list of anatomical proper names and their origins. Finally, a very full general vocabulary precedes a usefully arranged index. The book is

well arranged, and should be found of great value by all who need a work of this kind.

PROCEEDINGS OF THE NATIONAL SCHOOL OF DENTAL TECHNIQS FOR
THE YEARS 1893, 1894, 1895 and 1896.

Much valuable material is here presented for it gives the entire proceedings of this body since its organization. The good work that this association has done and is doing is of inestimable worth; greater than the profession in general realize. Its influence will, however, be felt more and more as time goes on. The editors, Drs. Weeks and Hoff, are to be congratulated upon the creditable appearance of the book of proceedings.

TRANSACTIONS OF THE PACIFIC COAST DENTAL CONGRESS, HELD IN
SAN FRANCISCO, JULY 13-16, 1897.

It requires 285 pages of printed matter to record the proceedings of this meeting. It is a valuable work and shows that Eastern dentists are not having the benefits of all the good things presented to the dental profession in the United States. The book is neatly printed and bound.

SOCIETIES.

St. Louis Dental Society.

At the regular monthly meeting of the St. Louis Dental Society, officers for the ensuing year were elected as follows:

Dr. John G. Harper, president; Dr. M. C. Marshall, vice-president; Dr. James C. Chisholm, corresponding secretary; Dr. W. G. Cook, recording secretary; Dr. A. J. Prosser, treasurer. Committee on Ethics and Election—Drs. W. N. Conrad, J. P. Harper, J. G. Pfaff. Committee on Publications—Drs. J. H. Kennerly, F. F. Fletcher, Emma E. Chase.

Meetings will be held the first Tuesday evenings of each month at the Lindell Hotel.

JAMES C. CHISHOLM.

Corresponding Secretary.

Tri-State Dental Meeting.

TO BE HELD AT PUT-IN-BAY ISLAND, JUNE 21, 22, 23, 1898.

EXTENSIVE preparations have been made for the coming joint meeting of the Ohio, Michigan, and Indiana State Dental Societies at Put-in-Bay, Ohio, June 21, 22, 23, 1898. The program will be an elaborate one and will be presented in full in a later issue of the OHIO JOURNAL. Put-in-Bay Island, situated in Lake Erie, is 16 miles from Sandusky, 60 miles from Detroit, 40 miles from Toledo, 65 miles from Cleveland. Regular steamers run to and from the Island every day. The meetings will be held at Hotel Victory. This hotel is one of the largest summer hotels in the world. It is located in a beautiful natural grove on the highest point of land in Lake Erie, and commands a view of the lake from every side.



HOTEL VICTORY, PUT-IN-BAY, O.

The hotel is 600 ft. long by 300 ft. deep, the main part surrounding a court 200 ft. square. It contains 600 large, light, airy and elegantly furnished guest chambers, including 80 suites with bath, and every room fronts either to some lake view or beautiful court. The combined dining capacity is 1200 guests at one sitting. Thus you see every one can be accommodated.

The roads on the Island are excellent for bicycling. The lake is filled with choice game fish, bass, pickerel, perch, sunfish, etc., and the fishing is good in June. Then there is good boating, bathing, and other attractions. Arrange to attend this meeting; it will afford you an enjoyable and profitable outing.

All information obtainable regarding hotel rates, steamer fare, etc., will be given later.

OUR AFTERMATH.

ORTHODONTIA LECTURES.—Prof. C. S. Case, of Chicago, began his course of instruction in Orthodontia in the Dental Department Western Reserve University, Cleveland, the first week in February. He will complete the work in March.

MARRIED.—Dr. George Edwin Hunt and Miss Ida Grace Brooks were married Thursday, February third, 1898. At home after February 15th, suite four, The Victoria, Indianapolis. We extend hearty congratulations and best wishes.

PHOSPHORESCENCE OF DECAYING WOOD.—Kutscher has succeeded in cultivating the mycelium of a fungus from decaying wood, which is strongly phosphorescent, thus proving that the luminosity of that substance is due to an organized body and not to purely chemical causes, as Hartey and De Bary have assumed. The mycelium obtained from pine trees exhibiting the phosphorescent phenomenon was cultivated in decoctions of beech bark and agar-agar, forming a white brilliantly luminous growth. The fructification of the fungus has not yet been obtained; consequently its botanical characters cannot be decided.—*Journ. de Pharm.*

COMPOSITION OF GUTTA PERCHA.—Dr. E. F. A. Obach, who is summarizing all that is known about gutta percha in a series of Cantor lectures, shows that the purified substance probably consists of a hydrocarbon (pure gutta), having the formula $C_{10}H_{16}$; albane, $C_{10}H_{16}O$; fluavile, $C_{40}H_{64}O_3$; and a variable component named guttane. Pure gutta possesses all the good qualities of gutta percha in a much enhanced degree, becoming soft and plastic on heating, and hard and tenacious on cooling, without being in the least brittle. The resins appear to be simply accessory components, which have a decidedly detrimental effect when they preponderate. Water, wood fibres, bark, sand, etc., occur, of course, merely as mechanical impurities of gutta percha.—*Journ. Soc. of Arts.*

LAOS CINNAMON.—Most extraordinary prices are paid for this by Chinese, who consider it to be a remedy for all diseases, as much as 50 dollars being given for a "pair of barks," each piece measuring about fifteen inches long by four inches broad. This cinnamon is conveyed by pedlars, merchants, etc., in small quantities, overland from Laos States through Yuman and down the West River to Canton, and as it does not touch any customs stations of Indo-China or China, no statistics are available as to its quantity or value. Concerning the botanical source, the only evidence is Thorel's statement in botanical chapter of Garnier's 'Voyage d'Exploration en Indo-Chine' that *Cinnamomum cassia* grows wild in the forests of Indo-China situated about 19° latitude. He goes on to mention that "the bark of branches, the size of the thumb, is the more common; but the bark of great branches, taken off in large rectangular plates, is sent to the Chinese pharmacists, who sell it at an excessive price." I have grave doubts as to Thorel's identification of this wild tree, and it does not appear that he procured any botanical specimens. I do not know that there is in any herbarium a specimen of wild-growing *Cinnamomum cassia*, Bl. I am inclined to think that this Laos tree is different.—*Pharmaceutical Journal.*

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CONTRIBUTIONS.

A Clinic on a Fusible Alloy.*

BY GRANT MOLYNEAUX, D.D.S., CINCINNATI.

THE increased number and large variety of operations performed in the modern dental office, entailing as they do a considerable amount of mechanism, compel the busy practitioner to seek the most rapid method for the execution of his work.

The construction of splints, supports for loose teeth under treatment, regulating and retaining appliances, "bridges," crowns, etc., can only be properly executed under the direct supervision of the attending dentist.

If he be a busy man, both time and patience are taxed to the utmost by the cumbersome and lengthy methods generally employed in the execution of the purely mechanical details.

The methods generally employed are to procure an impression either in modelling compound, or plaster of Paris, followed by the mixing and pouring of a plaster model, varnishing, waxing, sand molding for die, counter die and swaging.

This requires two or more visits of the patient when one visit should suffice.

Rapidity in dental operations is always sought, but any

* Presented at the Ohio State Dental Society, December, 1897.

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

"new method" claiming such virtues is generally approached with fear and trembling, especially by our older brothers.

To allay that fear, I will state that the subject of this clinic has been known to the dental profession for a quarter of a century, and as possessing many virtues, the greatest of which has been overlooked. In advocating this new (?) rapid method we fully appreciate that old adage "make haste slowly" for rapid methods are only valuable when they are *accurate and perfectly understood* by the operator.

Woods' metal has been used in dentistry for many years and is known to contain bismuth, cadmium, tin and lead. The alloy before you contains the same ingredients as Woods' metal, the proportions being changed so as to produce an alloy that may be cast into a *modelling compound*, or wet plaster of Paris impression and give a *smooth, accurate* model or die in metal.

The advantage of being able to cast metal directly with wet plaster or modelling compound, can be appreciated by all practitioners of experience, if the model or die be accurate. We feel safe in saying that an alloy composed of five (5) parts of bismuth, three (3) parts of lead, two (2) parts of tin, and two (2) parts of cadmium, properly compounded, will produce, when poured into either of the above named impression materials, a more perfect model than can be obtained by the use of plaster, but a model of this alloy cannot be used in place of plaster in all cases, as in vulcanite or celluloid work, for the fusing point of the metal is about 130° F. It is especially designed for the making of a perfect die and counter-die with the expenditure of not over five minutes' time and with the very simplest kind of apparatus. By the use of such an alloy the difficulties of sand molding are overcome and the production of a perfectly adapted plate is the result. To successfully use this or any low fusing alloy several points must be constantly observed:

1st. Castings are sharpened and nearest perfect when the alloy is poured close to the congealing point.

2d. Overheating causes a loss of time and deterioration of the alloy.

3d. To make a perfect and smooth casting in modelling compound the impression should be first oiled and then the alloy is cast in a mush like consistency when it will fall in a thick soft mass into the impression which is quickly jarred on the table,

cooled in water and separated. A little practice will enable the operator to produce a perfect model in every instance.

4th. Take a plaster impression directly from the mouth, soak it thoroughly with sperm oil and pour the alloy at a little higher temperature than for modelling compound and let it stand until cold.

5th. In order to obtain a thick base for the model take a thin copper strip (in lieu of this take a strip of heavy writing paper) about ten or twelve inches long and two inches wide, wrap around the impression and hold in place by snapping over it a small rubber band. Fill in spaces between band and impression with soft putty which will always be ready for use by being kept under water. (A half pound screw-top vaseline jar half filled with soft putty and covered with water will keep quite soft for years).

6th. To make counter-die, wrap the copper strip around the base of the die and fill all undercuts and unnecessary parts with the putty, paint over the surface with whiting dissolved in water or alcohol and cast the alloy as cold as possible.

7th. Before remelting castings, they should be cleaned of all putty and other dirt.

If, however, the metal becomes contaminated it can be cleaned by heating until it becomes perfectly fluid, when the impurities can be removed with a piece of blotting paper. One illustration of the use of this alloy may be suggestive of its many valuable applications.

In adapting a gold or platinum base for full dentures where the recession over the tuberosities and anterior ridge is so great as to make sand-moulding without a core absolutely impossible, make the model or die of fusible alloy by casting into the impression. For such a case always use plaster as this can be broken off in such a manner as to be restored and a second die cast.

Upon this second the relief or vacuum chamber, made of block tin can be attached with thick shellac varnish or the relief can be first trimmed out of the impression.

Use the second die for the first stamping of the plate, making the adaptation to the undercut as close as possible with riveting hammer.

Try the plate in the mouth and properly trim and wire if necessary.

Replace on the used die and wrap the plate and die with one covering of cheese cloth or thin paper, place in the Parker shot-swaging device and swage.

The plate cannot now be removed from the die but by placing the same in hot water the metal will run out of the plate, leaving it unchanged in shape.

It can now be polished and after transferring the relief from the old die to the unused one, the plate is sprung onto it and swaging with shot and melting the metal out as before will leave the plate with an adaptation that cannot be procured by any other method. In taking an impression for metal castings, it should be a little thicker than usual and any number of dies can be made from the same impression, all of which will be alike.

The compounding of this alloy requires the greatest of care in protecting it from the action of the air during the first melting and in the manner of adding the metals as it never again approaches the first heat except by carelessness, the metal will remain permanent in composition and working qualities indefinitely.

The necessary expense of this alloy, which at first may seem unreasonable, will be saved in the saving of time in one difficult case.

After two years of constant use of this metal I can positively state that it will meet all the claims of this clinic.

Some Hard Cases for Cataphoresis With Suggestions.*

BY WESTON A. PRICE, D.D.S., CLEVELAND, OHIO.

THIS paper should be prefaced by a chapter on the general principles underlying and governing the practical application of cataphoresis to the dental organs, which has been omitted.

This subject was chosen for two reasons: First, to bring out a discussion upon this practical subject; and second, to answer some of the many inquiries that have come to me.

In the following, where the expression occurs that "the pain limit is low," we mean that a very weak current produces pain,

* Paper read at the Ohio State Dental Society, December, 1897.

and when "high," a very strong current will be required before pain is produced.

Suppose a bi-cuspid, with large buccal cavity, including the loss of the buccal cusp, from a line extending from the sulcus to the gingivæ. The resistance of the tooth high, say 75000 ohms, and the pain limit very low, say 0.00002 amperes, or one fiftieth of a milliampere of current the maximum the tooth will tolerate. In this case, the distance to the pulp is short, and relatively the resistance from the surface to the pulp at a point right over it is very much less than at a point near the margin of the dentin; probably not more than 1-10 as great. In this particular case we are to get anchorage grooves for a metallic filling, and of course they must be made near the margins, otherwise the life of the pulp would be endangered. The conditions existing are as follows,—an extremely sensitive tooth with a very low pain limit, and high resistance, which means that necessarily the process of anesthesia will be slow, and more certainly it would take place most rapidly in the path of least resistance, viz.: directly toward the pulp. This is just the part that cannot be utilized, and the margins, where the retaining forms must be obtained, are but slightly obtunded. Of course the obtunding of the whole tooth will be secured with the anesthesia of the pulp, but that, in this case of so low a pain limit, would be a very long operation; probably not less than thirty or forty minutes. Besides it is going away around to produce what we want, viz.: the obtunding of the dentin at its margins. We will suppose the decay to be removed if necessary by a short treatment in the ordinary way. Now cover all the dentin with oxyphosphate cement or chloropercha, except where the retaining grooves are to be made, and apply as usual, and it will be found that in very much less time, these grooves can be cut painlessly. This simply concentrates the energy to the part we wish to anesthetize.

ONE OF THE MOST DIFFICULT CONDITIONS TO COMBAT

is that of a secondary deposit of dentin, either in the pulp chamber, or the tubuli. In these cases, and especially the latter, the sensitiveness is sometimes very acute, even extreme, notwithstanding the fact that the dentinal fibres have been reduced in size to a very great extent. In typical cases of this condition the resistance through the tooth to the pulp, runs up to hundreds of thousands of ohms.

A typical case was as follows: A superior left cuspid in which both mechanical and chemical abrasion had denuded the entire occlusal surface almost to the pulp line. The dentin exhibited a surface almost as hard and smooth as glass, and extremely sensitive. The bite was such that no protection could be put over the nearly exposed pulp, which was the source of extreme discomfort and inconvenience to the patient, who was about fifty years of age. Two things were indicated: the protection of the tooth by a gold filling and the previous destruction of the pulp. Everything was adjusted as usual, and the current allowed to run while inserting a large gold filling in another tooth. The current was increased to 42 volts from dry cells and the patient felt no sensation. A milliamperemeter, reading in fifths, showed no accurate reading, but the Rowland D. Arsonval galvanometer, which is adjusted to read in decimals of amperes, registered 0.000093, making the resistance of the tooth approximately 450,050 ohms. The current was allowed to run for an hour, while completing the other operation, when to my great surprise, only the surface, and to a very slight depth was anesthetized, and below that it was positively unbearable. Of course I was chagrined and disappointed, and especially so that it had happened with this particular patient. A new appointment was made, to give me an opportunity to study the case. The next application was made as follows: The entire surface was covered with cement, quite thick, and a small bur, about No. 5, used to drill a hole through it, directly over the pulp. We were forcibly reassured of the extreme sensitiveness of the dentin when the bur reached it. The anode was placed in this small hole, which was a very small platinum wire twisted with some fibres of cotton, and was kept moist with an aqueous solution of cocaine nearly saturated. The voltage was increased to 72 from dry cells, without pain. The amperage was 0.00013, showing the resistance to be about 550,000 ohms; the increase of resistance over the first application, is of course explained by the diminished cross sectional area of the path through the dentin. In ten minutes I drilled almost to the pulp without sensation, and reduced the resistance just half, viz.: to 275,000 ohms. Another application was made of 0.00026 amp. at 72 volts, for fifteen minutes, when the entire pulp was removed with the drill and a broach, without a particle of sensation, and the operation completed at once. This method

comes into service very often, as for example the rapid anesthesia of a pulp in any denuded and broken-down tooth, requiring to be crowned, or where a great deal of sensitive surface must be operated upon, as in chemical abrasion of a molar. In this latter case, the pulp may be anesthetized for a time, and not injured nor approached, thereby allowing the tooth to be worked upon at will for the time.

The other form of secondary deposit, viz.: within the pulp chamber, thereby forming a dense protection, is occasionally the source of much hindrance to cataphoresis. As these are best demonstrated by actual cases, the following is a typical case: A right superior lateral which had been the source of constant neuralgia for months, and extremely sensitive to thermal changes applied to the tooth at any point; caries was so extensive that anchorage could not be had for a gold filling without using the pulp chamber, which with the above abnormal conditions, indicated the destruction of the pulp. Application was made while inserting another gold filling. The pain limit was found at 0.00002 amperes, or 1.50 of a milliampere and 26 volts, making the resistance 130,000 ohms. This was surprisingly high. When I undertook to drill into the pulp chamber, I found it receded, and although the current had been running long enough to anesthetize perfectly, I found that directly toward the pulp it was still sensitive, though in some directions around this point, there seemed to be perfect anesthesia. This was apparently a perfect failure. From the figures and the conditions, I decided after studying the case, that the resistance to the pulp was greater than the resistance to the margins around the tooth, and the current was probably mostly going in that direction instead of towards the pulp. Accordingly the rubber cloth was forced up under the gum and a piece of gutta-percha placed between the gum and the tooth where the shortest circuit seemed probable, and another application was made with good success in a few minutes.

THE PAIN LIMIT.

It occasionally happens that we want to remove the pulp for immediate filling, in a bicuspid or sometimes a molar. Probably the patient has come some distance and it will be a great convenience to complete the operation at the same sitting. It frequently happens that after using cataphoresis for some time, which we

think should be long enough, we try to drill out the pulp, and find suddenly at some point there is very definite sensation. Perhaps we make another long application, and this point is but slightly improved. This is certainly discouraging, and I confess I have been quite inconvenienced by it. What is the explanation of it? Perhaps it is a crown cavity where we are sure our insulation is perfect. I have never found just this condition in a single rooted tooth. Time will not permit us to discuss in this paper the conditions which determine the pain limit. It is a fact, however, that nearly every root of a two or three-rooted tooth has a distinct and different pain limit from the others. It will not follow that the one, with the lowest pain limit, or is the most sensitive to the current, is getting the most current; indeed it may be quite the reverse, as is easily demonstrated. In the case we will suppose, which is like many I have detailed records of, the resistance in the most sensitive root is probably several times that in the other root, say it is ten times as great. Of course, then, ten times as much current is passing through the other root, and on account of the greater density of current, that root of least resistance is anesthetized much more rapidly. All the time the total amount of current used is determined by the pain limit of the tooth, which simply means, by the pain limit of the most sensitive root, which in this case, is the one getting the least current. As the process of anesthesia advances, it is not proportional in the different roots, consequently the rise of pain limit is not proportional. Probably in one root it has advanced from 1-10 of a milliamperé to one-half in twelve minutes, while in another root from 1-50 to 1-45 of a milliamperé. Here, clearly, the root of lowest pain limit, or greatest sensitiveness, is determining the rate of increase for the whole tooth, and long before this root is perfectly anesthetized, the other is so complete, that we have been losing great quantities of energy to no avail, or probably to a deleterious effect at the apex of one of the other roots. I have almost always found in these cases that after twelve or fifteen minutes I could remove the pulp without sensation from one root of a two-rooted tooth or probably two from a three-rooted tooth. Now just here lies our opportunity to save time. Plug these roots up with some cotton and sandarac, or gutta-percha, and concentrate the energy on the remaining root, and the results will be very gratifying.

One of this class was as follows: Tooth, lower left first permanent molar, patient about twenty-five. Large suppurating exposure had been giving considerable trouble. Operation had to be completed at the same sitting. On applying cataphoresis the pain limit was reached at .12 milliampere or twelve one hundred thousandths of an ampere. The voltage was 4 and the resistance 33330 ohms. The medicament used was a saturated solution of cocain in guaiacol, though I generally use hydrochlorate of cocain in distilled water. On using for ten minutes the pain limit was raised to .25 milliampere and the voltage to 8, making the resistance of the circuit 32000 ohms. The contents of the pulp-chamber were removed with a drill without sensation, except one place which was over the anterior root; a second application was made when the pain limit was reached at 0.23 milliampere, with a voltage of 5.3, making the resistance of the circuit 26840 ohms. On examination I found the anterior root still sensitive, and no sensation in the posterior root, even beyond the apex, which had a large foramen. The tissue was entirely removed from this, and the root filled with a gutta-percha plug, and a new application made, when the pain limit was found at 0.15 milliampere, with 9.3 volts, making the resistance of this root 62000 ohms. In eight minutes the pain limit had raised so that the current was increased to 0.7 milliampere, and the tissue of this root entirely removed without sensation, and both filled at once. I have had this condition duplicated several times in two-rooted bicuspsids, and have used this treatment to good advantage.

DIFFICULT CASES.

Probably one of the most common difficult cases is found where there is confined suppurative inflammation in the pulp, and in which the current produces pain apparently by the pressure of the gas developed. These cases are very easily recognized with the milliampere meter, for instead of the pain limit getting higher it recedes. If it is not pronounced it will probably turn in a few minutes and proceed normally, but if very marked lowering of the pain limit is present, it has been almost always the case in my experience that on removing the anode, and carefully raising the residual decay over the nearest point to the pulp, pus will escape. This is a very strong indication of this condition, and with a very sharp excavator, the decay is easily raised without pain. After

the escape of the pressure, the cataphoric application will be usually normal.

IS COCAIN DISORGANIZED BY THE ACIDS OF PUS?

Considerable study has been made, to see if the organic acids of the pus did not disorganize the alkaloid cocain, thereby destroying its therapeutic action. In passing 0.00025 amperes through a layer of first 10 per cent. solution of cocain hydrochlorate, then a layer of pus and a layer of surface water, separated by porous partitions in a long glass tube, as also at the same time a series with blood, and one with water instead of pus, for twenty-five minutes, we found no great difference in the amount of cocain present in each, though apparently some less in the pus tube. I am not satisfied yet as to the perfection of this test, having made but one. Sometimes we get

CASES WHERE IT IS PRACTICALLY IMPOSSIBLE TO RETAIN THE ANODE.

For example, a broken down bicuspid or lower molar with large sensitive exposure. The patient could not endure to have an electrode held on the exposed pulp. A convenient method of retaining it is, after drying; lay a piece of dry cotton over the point of exposure, and flow cement over it. As soon as it stiffens, puncture a hole through the cement to the dry cotton. Saturate it through the hole with medicament and wedge with cotton the small soft wire anode in the hole. This perfectly insulates the tooth from the surrounding gum and clamp, and holds the anode perfectly. I think it is seldom advisable to try to do two cavities at once; have a double apparatus, and do them separately, it saves lots of time.

MAJORITY OF FAILURES ARE FROM SIMPLE CASES.

The cases I have just cited are quite exceptional and are only a very few of the exceptional cases. However, in my judgment by far the great majority of failures come from the simple easy cases through nothing more nor less than imperfect insulation. Gentlemen, I do not believe there are a dozen operators in the state, who in a score of cases actually get fifty per cent. of the current they use through the tooth they are obtunding. I very often find ten times as much current leaking as is going through the tooth. The fact is that putting a rubber over a wet

tooth, and fastening it with a clamp, and perhaps a single or double waxed ligature to assist in holding the rubber is not, except in the rarest cases, an insulation to the current.

The ligature soon gets wet, the clamp touches the wet tooth and gum, and if you will test one hundred of the cases adjusted in this way, I am sure you will find fully 95 that will have much less resistance than the average tooth. It is an easy matter to test them; of course a milliamperere meter is essential. And by the way, I believe the time is not far distant and should be here now, when it will be considered positively malpractice for a dentist to use cataphoresis without a milliamperere meter. It would be just as reasonable to send a locomotive engineer out with his load of human freight without a steam guage or a safety valve. But some one says the pain limit is the safety valve. Oh, no, it isn't. Suppose a nerve is saturated with cocain, what power has it of crying out when a destructive amount of current is passing through it? Let me cite a case: A large buccal cavity in superior left third molar presented which had been aching intensely and had apparently a large congested exposure. Very sensitive to suction and positively unbearable to touch. I agreed with the patient that it should be devitalized, which I proceeded to do with cataphoresis. The toothache stopped, and although I started with one-tenth of a milliamperere of current, in ten minutes the pain limit had raised to one milliamperere. I removed anode and took large bur to cut out the main portion of the pulp when to my surprise it did not fall through. I examined and found the aprarent exposed pulp to be a piece of an apple. On removing all of the decay there was no exposure. I filled, using a non-conductor liberally beneath the filling. In just three months the patient came tearing into the office holding his face with the regulation abcessed tooth. The current had killed the pulp. This was bad diagnosing, but showed that the current in excess destroyed the pulp.

Cataphoresis in the hands of the lazy, reckless, unskilled dentist, will be a positive curse to humanity; while in the hands of the earnest, thoughtful, skillful dentist, it is one of the greatest blessings that has ever come to us.

SUCCESS WITH CATAPHORESIS

is synonomous with competency, and this will always be the case. You show me in the coming decades a man who is practising den-

tistry simply for what he can get out of it, while putting just as little as he can into it, and I will show you a man who isn't having success with cataphoresis. Time will develop two things, viz. : a clear conception of all the phenomena of cataphoresis, and the most consistent practical application of the process. If any critic is unsuccessful the reflection will not be upon cataphoresis, but entirely upon himself.

Is it not truly wonderful that a subject which has taken months and months of careful investigation on the part of some earnest investigators to secure a few fundamental principles, with very accurate and delicate apparatus, could be weighed and appreciated and its future prescribed by some others in a few weeks, with very inferior apparatus. I mention this because I have taken the trouble to investigate to find with what authority some critics have spoken, and have found that scarcely any had milliamperemeters, and most had such crude apparatus as the present stage of advancement would deem a guarantee of failure owing to their deficiency. We know that many teeth have so delicate a sense of pain to variation of current that they will respond with severe pain to the variation of the two-hundred-thousandth of an ampere, and some to much less. Now suppose we try to use some of the early instruments on this case. For example, a short column of surface water, say five inches. This would have a total variation of about 5000 ohms. Now to give a variation of current less than the above, at say 10 volts, the plunge would have to drop less than the one-hundredth of an inch through the first inch, which was a mechanical impossibility as they were adjusted. If it dropped one-tenth of an inch the current would raise away beyond the pain limit and produce intense pain. They could not give success in such cases, nor could any of the early instruments, and I have not seen a modern type that has as fine adjustment as very many teeth demand. The future must furnish these two things: instruments of a greater total and more gradual variation, and more knowledge, for as yet we scarcely know the alphabet of the subject. It was my purpose to publish a quantity of data showing the extent of time and the amount of current required at the beginning and ending of each operation and size of cavity and medicine used for a great variety of cases, but the length of the paper will not permit.

Operative Orthodontia.*

BY GEORGE W. PAGE, PITTSBURG, PA.

THE subject of this paper is chosen for the purpose of giving a few practical suggestions that can be applied to cases of irregularity and be of assistance in choosing suitable appliances.

By adopting a system and arranging your cases systematically many of the disagreeable features of this branch will be overcome. Start right and you will be able to overcome difficulties with ease and feel that you have command of the situation.

Never give any consideration to the appliances necessary to correct a case until you have mastered all the details of the case.

To be successful it is necessary to have a correct knowledge of normal occlusion. In operative work you must know the occlusion of each tooth; especially if you intend to make use of the principles that will give you an intelligent view of the work and help you to systematize the different cases that come under your care.

The following classification will demonstrate to you a step towards the understanding of this branch, and all cases will come under one of the following divisions:

First Division—Jaws normal, teeth occlude mesio distally correct.

Second Division—Teeth occlude, distal to the normal.

Third Division—Teeth occlude mesial to the normal.

Transitory cases are rare and these may be resolved into one of these divisions if given the proper consideration.

What are the conditions necessary to satisfy you that you can recognize these divisions? In the first division—jaws normal teeth occlude mesio-distally correct. Examine the first permanent molars and apply the following: An imaginary vertical line commencing on the buccal surface of the superior first molars should leave it at the point of the mesio-buccal cusp and pass to the buccal groove of the inferior first molar. It is seldom a patient presents himself with these teeth removed, but many times they are badly broken down by decay, and if unfavorable conditions are present you will have to apply the above to the second molars

* Read before the Odontological Society of Western Pennsylvania, December, 1897.

if present. In this division you will find the greatest number of irregularities that are only relative to the teeth. Extraction is apt to increase complications and is of little value in this division. When you can recognize this division make up your mind that you have a chance to show skill in this branch, and being able to recognize that no correction of the inferior jaw is necessary, is of great assistance to you in correcting the mal-occlusion of the teeth.

In the second division the teeth occlude distal to the normal. It is easy to recognize this division if you understand the rule to find the first division. In this division you will find the mesial slope of the mesio-buccal cusp of the superior first molar occluding with the distal slope of the inferior second bicuspid and even with the distal slope of the inferior first bicuspid. In this division you have the different degrees of protrusion of the superior teeth, and a definite knowledge that the relation of the jaws is abnormal will aid in the correction of the mal-occlusion; especially in young patients, as it is possible to bring the inferior jaw forward as well as reduce the protrusion of the superior anterior teeth and overcome the necessity of extracting some of the superior teeth. In this division you will find the cases with the most difficult obstacles to overcome and require the longest time to correct.

In the third division the teeth occlude mesial to the normal. In this division the mesial slope of the mesio-buccal cusps of the superior first molar will occlude with the distal slope of the disto-buccal cusps of the inferior first molar, and even to the distal slope of the mesio-buccal cusp of the inferior second molar, producing a protrusion of the inferior jaw. A correct knowledge of the position of the inferior jaw in this division, especially in young patients, helps you to recognize a condition that may be partly overcome by forcing the inferior jaw distally, as well as correcting the mal-occlusion of the teeth. It is seldom you find such a favorable position of the inferior anterior teeth that indicates extraction will assist you in this division.

Having given you an idea of the system to this point allow the following as to causes that must be considered in connection with your cases: All causes, with the exception of those that come under the care of a throat and nasal specialist, may be considered as subject to your correction, and you must overcome the cause if you wish to establish a permanent retention of the work you have done.

Having given your case the above consideration do not hesitate to take impressions of it in plaster of Paris, and make accurate models. It means much to you if you are able to see how fast you are progressing in the moving of one or more teeth. Also to convince your patients that some advancement is made. Always have models of both jaws as it will aid you to detect any movement you do not care to have take place, and if you trust to your memory and appliances it is not long before the whole has gone wrong and you are disgusted. It is very easy to elongate a tooth, but not so easy to overcome the same after it has happened, and if you have accurate models a tooth does not move in the wrong direction very much before you have discovered the movement. It is easy to take a working impression of the teeth while you are doing the work and use the same for comparison with the original model. This impression may be taken in any substance you wish to use with the exception of plaster of Paris, and it is only necessary to let the patient bite into the impression material to give you the proper impression. Having secured good impressions of your case and made good models you are safe in selecting appliances, but it is necessary to understand the appliances as well as the cases.

Prof. Angle's system has produced good results and being universal in its application has proved a reliable help for the general practitioner, and the appliances are easily understood and applied, especially when attention is given to the forms of anchorage that are necessary in orthodontia. Stationary, reinforced, reciprocal, occipital and ordinary anchorage, each form has its special use and wherever universal appliances are used, must be understood so as to apply the right form to produce the required force and not disturb teeth unnecessarily.

When the case is completed there is much more dependent upon the retention than is generally understood. To restore normal occlusion means a great deal towards a permanent retention, but the use of the band in connection with spurs and bars has to be resorted to; also the small plate when you have expanded the arches.

In closing allow the following as an order of procedure in gaining an understanding of the operative branch of orthodontia:

First. A thorough knowledge of normal occlusion.

Second. Systematize cases in their proper divisions.

Third. Correct models.

Fourth. A perfect understanding of the different combinations of an universal appliance.

Fifth. A thorough knowledge of the forms of anchorage.

Sixth. How to simplify forms of retention and have the same effective at all times.

Professional Courtesy.*

BY W. E. VAN ORSDELL, D.D.S., SHARON, PA.

WHEN your committee suggested that I write a paper for this meeting on professional courtesy, the first thought that went meandering through my mind was, has such a thing an existence, can true professional courtesy be found in our profession or in fact in any other?

To be courteous means to be kind, to do a kind action for another, disinterestedly and without ulterior motive, such people doubtless can be found even in dentistry. When we find them we are apt to find that they were born with the milk of human kindness largely developed within them.

Professional courtesy, it may be contended, may be acquired, perhaps a simulation of it like to the christianity of the christian who prays to be heard of men. In the continued hubbub, struggle and grasp for existence and self, our brothers are forgotten and self so comes to the front that the world looks like one great large Ego. To I and I only belongs by rights the good things of life.

Professional courtesy, we read of it in the dental journals, we hear it spoken of in the dental society and again we have heard it mentioned beside the dental chair.

It is a nice thing to write about, to speak of, and with what a grace we tell of it as we stand beside our office chair, so tickling to our vanity, so soothing to our conscience. We speak kindly of a brother, and then we swell up, boil over and tell the world of the magnitude of our kindness of heart, and of our wondrous self-sacrifice. Perhaps we do some little act for a brother's

* Paper read before the Odontological Society of Western Penn., Dec., 1897.

patient, who asks the price. How we fill up as we reply "nothing, I do that for my brother," and then how our minds picture to us—and we can hear the he or she for whom the kind act was done, proclaiming our magnanimity of heart, and the masculine "nice fellow," or the feminine "he's so nice," sounds in our ears and vaingloriously puffs us until we veritably believe that in us we find the exemplification of all the virtues of the beatitudes and before us we fain would see a long roll of good deeds done, inscribed in letters of living light and we thank God we are not as other men.

Oh! it is a nice thing to be courteous to your friend and brother. Did you ever see the man who was not? Can he be found? Who is he? I am sure I am courteous. Ain't you, and all of you?

Why, we only differ in our demonstrations of it. I have in my mind's eye a man to whom I could introduce you and you allow him a perspective view of what your family dentist may have done for you, he takes a view, straightens up and says, "Who's your dentist?" You tell him. "Abominable," says he, I am so sorry, it's all wrong, worthless, not worth a—, well he don't swear, but you feel as though you would like to, and then he proceeds to force an instrument in here and in there until the whole business is condemned and he tells you you should not have gone to any of those quacks. Why didn't you come to me, and then he tears down oftentimes good fillings, better than he will put in their place—and when you get your bill you feel the magnitude of your mistake. The only virtue in this kind of courtesy is that you know just where to find it, it is always demonstrated in this straight forward, open manner—and these kind of fellows are not in a great minority.

Another one comes to mind. He is courteous. You consult him, tell him whose victim you have been and he tells you Dr. so and so is all right, but in an insinuating manner he gives you to understand that these other dentists are all right, but they are not in his class. Had he been your dentist things would have been different, he does not blame the other fellow, he did the best he could according to his light, and then he swells and tells of his superior advantages, his greater qualifications, and his ability, in fact to give lessons to all these other fellows. The poor patient bows in humility before the power of his greatness. He was courteous. You are all right but not in his class.

Another truly courteous fellow comes to my mind, a miserable cur, he views the gold, silver and porcelain monuments that adorn your mouth, meekly asks the artist's name; says it's all right—with his mouth, but oh! that look and the expression of that face—he does not say a vainglorious word for himself, does not criticise by word the operative work of his brother, tells you in words it is nice, but did words ever tell the tale, that those eyes, that expression, and those movements of supreme disgust imply? You feel how you are pitied, you feel the unworthiness of that other poor artist, and that in the presence of your present surroundings he is submerged, drowned, overwhelmed in obscurity, ignorance and incompetency. The slight operation you called to have attended to is performed, then the doctor discovers a something not just right, you make another appointment and another, until all your former monuments have disappeared. No fault of that other artist, but again that look and that face. His professional brother has been smeared over with honied words and then damned by a look. That man was courteous in words. His language was extremely so, but his every look and actions said "he lied." In his heart he was mean, despicable, damnable, one of those whose honied words make you creep, and whose praises make you feel like hitting a John L. Sullivan in the jaw. You have seen those fellows, they are not so hard to find.

Again, another man, and he is a relief to think of. He is the soul of honor, stands high in the profession, values his services at a figure commensurate with his ability. The millionaire and wealthy man pays him to the full measure of his own estimated value. To the poor he is ever ready to extend the benefit of his ability at a figure regulated by their ability to pay. To his professional brother he is above reproach, and would rather loose his right hand than by look, word, or deed in any manner injure one of them. He is harder to find than some of these other fellows, but he exists, thank God.

And now again, another one. He is poor, self figures so little in his make up. Avariciousness is so foreign to his nature. Jealousy is unknown to him. Modesty so predominating that somehow, the world fails to think of him, and the loaves and fishes drift past him to his grasping neighbor, who perhaps has much less skill and far less merit. His is the kindliness of heart that never speaks ill of his neighbor and can never be accused of

a mean action toward one of his profession, or in fact toward any one.

He stands among the millions of his fellow men with love in his heart, for all. Everybody likes him, everybody has a good word to speak of him and yet his lack of aggressiveness leads every one to neglect him, and so his life is a struggle for existence, with poverty and want his own boon companions, his ear is ever open to the cry of distress and he is ever ready to share his little all with the needy one who asks for it. He plods his way through life, one of those good creatures without ostentation or show, one of those to whom in the end it shall be said: "In as much as ye did it unto one of the least of these my children ye did it unto me."

I have thus briefly traced the different ways in which I in my own experience have observed the different demonstrations of professional courtesy. It is cheering and comforting to know and feel among all the hypocrisy and deceit attending the different demonstrations of our treatment of our professional brethren there does stand out some good, noble, true souls, and that there is still in the hearts of some men, love for their fellow man. May the little leaven leaven the whole lump.

Now brethren, it seems to me we might have true professional courtesy, even among dentists. If we on all occasions could only in our thoughts of, our words concerning and our acts toward our fellow dentist, put ourselves in his place, and do and judge accordingly. Forget self, and by kind words and acts, earn the good will of our brother, so that the good we do may be returned to us in kind.

The world is moving onward, the millenium drawing nearer. The churches are letting down the bars of superstition and bigotry and doctrinal exclusiveness, and now the religion of the Man of Gallilee is coming more and more to the front, with its grand exemplification of that new commandment that "ye love one another." When the religion of love shall fill the hearts of men, then, and perhaps I may say without fear of contradiction, not until then will we find true professional courtesy. No jealousy, no envy, no hate to mar the universal peace and good will that will then prevail. God haste the day.

Correction of Cleft Palate by Means of Obturators. Some Cases in Practice.*

BY WM. L. COOK, D.D.S., BEAVER FALLS, PA.

I ASSUME that you are all familiar with the procedure of making an obturator from vulcanite.

My first case was that of a child with congenital cleft and was operated upon at the age of five months for hare lip. When first brought to my office for examination he was in his eighth year and couldn't utter one word to be understood by a stranger, his mother could understand his wants by the unbearable noise and movements of his hands. I told his mother I could greatly improve the boy's speech. After selecting a suitable tray I sprayed the nasal cavity and mouth with a five per cent. solution of cocain to allay the sensitiveness, allowing five minutes to elapse before taking the impression. For my impression material I used modelling compound. I placed what I thought was sufficient amount in the tray, of proper softness, and placed in the mouth for a few minutes, then I removed same and trimmed off the surplus compound and that part which extended into the opening, then I re-softened the compound in tray and inserted again and cooled by the use of ice water. It is always best to have two impressions. Compare carefully with the mouth and select the one where the lines of the muscles are most clearly defined. I proceeded and finished my obturator in the usual manner. At first I witnessed a great deal of trouble to convince the lad that he must wear it. Finally by means of ligatures the task was completed. I saw the patient every other day for two weeks and at the end of three weeks I could understand the child by his calling to me when I was riding past his home on my wheel.

In about four months his mother sent him to school and he is getting along nicely. He calls at my office about every four or six weeks. It is well to caution the patient as regards to the improvement in speech and great care should be exercised to have it fully understood that the articulation must be learned, especially the lingual and palatal sounds.

My second case was that of a lady age 30, brunette, married

* Read before the Odontological Society of Western Penn., Dec., 1897.

and has enjoyed fairly good health. Family history bad, having buried two sisters and one brother of pulmonary consumption. Patient visited office about 1st February, 1896. About three months prior to her visit she noticed a small pimple in the roof of her mouth which extended and grew larger making a soft spot. Family physician looked upon it as a trifling matter and gave very little treatment. Shortly before the visit the soft spot gave way leaving an opening three-fourths of an inch in diameter. Upon careful examination found three or four pieces of necrosed bone which were removed, being part of the hard palate, vomer and the perpendicular plate of the ethmoid bones. After which the nasal cavity was irrigated with antiseptic solutions and packed with iodoform gauze ten percent. This treatment was kept up for about three weeks. The speech was very much impaired without the cavity being packed. I took the impression in the usual manner after spraying the parts with a five per cent. solution of cocain to allay the sensitiveness, and made the obturator out of black rubber. This case was a complete success and speech was restored almost immediately from the time the obturator was inserted.

My third case was that of a male 38 years of age, brunette. In this instance the fissure was confined to the distal portion of the hard palate and the soft. This was the result of syphilis, patient was confined at the hospital in Wheeling, W. Va. for one year, continued anti-syphilitic treatment for another year. The break extended from the posterior opening of the nares through the velum looking backward and nearly an inch in breadth. The uvula was entirely absent as well as the lateral half arches, and along with them the palato-pharyngeal and constrictors isthmi faucium muscles. In this case deglutition was impaired to a great extent; the food would get into the nares and the fluids would pass into the nasal cavities and out through their anterior openings. The obturator constructed for this case was of one piece and made to cover the hard palate completely, extending from the central incisors to the posterior wall of the pharynx, passing a short distance beyond the edges of the opening on each side. The plate was made to fit firmly against that portion of the soft palate which remained, yet not so firmly as to cause irritation, the edges of the plate being slightly bent downward for the same reason; the object being to prevent the possibility of the soft

parts being drawn above the palate, which would afford a communication with the nares. This patient was a railroader and was so unfortunate as to get his discharge soon after the work was completed, and left for parts unknown to me; consequently I cannot give you the result of this case.

ALL SORTS.

Triangular Pins for Crowns.

These pins are made by soldering together two wedge-shape pieces of plate No. 8 gauge or thereabouts. One piece of metal must be made slightly wider than the other. The larger piece is placed flat on the soldering block. The other is then placed on its edge, along the mid line of the broader piece, point being to point. It is soldered thus, in the case of platinum, pure gold being used, with other metals any ordinary gold solder. The result is a piece of T metal tapering to a point at one end.

The root is prepared by reaming the canal in the usual way, and then enlarging in three directions with a long fine fissure bur, to receive the angular pin. The canal then presents a T-shaped orifice into which the T-shaped pin just fits.

The crown is then fitted in the usual way, by burnishing platinum foil over the root, or by any other of the many methods known to us.

The advantages of this pin are:—(1) absence of rotation; (2) great strength—angular metal being considered the strongest possible; (3) disposition of the greatest strength just where most needed, that is, where the crown and root approximate; (4) ease and economy of construction, it being possible to make the pins of scraps of plate left in the usual course of work.

Before cementing the crown in place the pin may be barbed by cutting with a sharp knife towards the point of the wedge along the three edges of the pin.—DR. C. S. REED, *Jour. Brit. Assn.*

Magnetic Properties of Tempered Steel.

S. Corie gives the results of experiments in which bars and rings of steel were heated in an electric furnace, the spiral current of which at the same time furnished a magnetic field. It was found that steel does not take the temper unless heated to a temperature superior to that at

which its magnetic properties change, and that steel containing one-half per cent. of carbon is best suited for the construction of permanent magnets, whilst the presence of tungsten or molybdenum is advantageous. The presence of other metals in steel does not usually modify the residual magnetization, but it often considerably increases the field required to cause demagnetization. The greater this field, the less do blows affect the stability of magnetization in bars. As regards the effects of heating, a temperature of 100° or more is detrimental to good magnetic steel, while the best permanent magnets are obtained by heating the steel to 60° only, and partially demagnetizing it after having magnetized it to the point of saturation.—*Bull. Soc. Indust. Nation.*

Lactophenin as an Analgesic.

Dr. S. V. Clevenger, after pointing out the disadvantages of various analgesic drugs, states that lactophenin is destined to supersede largely the entire array of analgesics proper, owing to its non-toxic peculiarities and the feeling of comfort described by many physicians as following its use. It affords the best results with the least ill effects. Its range of incompatibility is less than other synthetic compounds, and it may be combined with caffeine, quinine and salicylic acid. The minimum dose of 5 to 10 grains may be increased until a daily maximum of 45 grains has been reached. It is but slightly soluble in water, although acting promptly, so that it can be given dry and be washed down with a drink of water. A dose of 15 grains usually acts as a feeble hypnotic. There are no untoward symptoms following its use, and contrary to the experience with some synthetic drugs, the pulse becomes fuller and stronger under its use. The range of application is extensive, and the testimony of the author is in corroboration of the findings of other physicians as to its superior analgesic effects, its safety and promptness of action.—*American Druggist.*

A Temporary Crown to be Worn while Permanent Crown is Being Made.

At the recent clinic of the Odontographic Society, Chicago, Dr. Taggart demonstrated the making of a temporary crown.

A square platinoid bar (platinum and silver) about gauge twelve and about an inch in length, is selected, next about three-eighths of an inch of one end of the bar, by means of a riveting hammer and the sharp end of the anvil, is somewhat flattened so as to produce an abrupt shoul-

der in the continuity of the bar, next a plate tooth of approximately the correct size and color is selected; in trying to pass the flattened end of the bar between the pins of the tooth flat on to its surface, it is found that the bar is too wide; with a plate-punch a small amount is punched out from both edges of the flattened end of the bar producing a slot for each of the pins, which are riveted down over the bar and thereby fill up that part which was made hollow by having malleted the bar down and produced the shoulder. The tooth is next soldered to the bar with soft-solder (of course without investing); after somewhat heating the tooth in a Bunsen burner, a small quantity of gutta-percha is moulded about it with the fingers, the pin is shaped to approximately fit the root; the whole is then somewhat warmed and pressed to place, no attention being paid to keeping the root dry; the unfinished piece is then removed, and all excess of gutta-percha is trimmed off; a fairly solid and a good appearing temporary crown has been made in less time than it takes to explain. Set the crown with gutta-percha.—*Amer. Dental Weekly.*

Amalgam vs. Gold.

I have had proof that amalgam fillings had been detrimental to the health of patients. I have had, perhaps, a dozen cases in my practice, cases that had been referred to me by physicians who stated they thought the mercurial fillings had proved detrimental and asked me to remove them. Upon the removal of the mercurial fillings and the substitution of gutta percha, cement or gold, in these cases there occurred a cessation of the troubles which had existed. I do not believe that, ordinarily, the mercury in such fillings is detrimental to the health of the patient, but idiosyncrasies of constitution sometimes exist, which seem to contraindicate any combination containing mercury as we find to be the case with other drugs; for example we find patients who cannot tolerate morphine, which acts in such individuals more as a stimulant than a narcotic.

I also believe that in the every-day practice mercurial fillings are, in the main, detrimental to tooth substance. As I continue in practice my experience teaches me that gold is the best material to use in a tooth that needs saving. Not only my own experience, but the work that I see from my brother practitioners, justifies me in taking this position. Among my own patients for whom I did work five or ten years ago, where I put into the month five or six gold fillings, and six or seven amalgam fillings, when they come back to me, I find that the percentage of successes with gold is larger than the percentage of successes with amalgam. I observe another thing: that the margins around the gold fillings are just

as good, when there has not been a recurrence of decay, as they were when the gold was first placed in juxtaposition with the tooth substance. With few exceptions I have never yet found that to be the case with amalgam fillings. I also note that when I take out an amalgam filling, which has been in the tooth for some time and replace it with a gold filling, it will not serve as well as it would probably have done had the amalgam filling never been placed in the cavity. This is my experience, day after day; and I am using more and more gold, and less and less amalgam, every year; yet I said on this floor, only a short time ago, that amalgam is one of the necessities of the dentist; he could hardly practice dentistry without it, any more than he could practice dentistry without burs, excavators or rubber dam; it is absolutely necessary, he needs it and must have it; but I contend that the more gold a dentist uses in his practice the greater the percentage of successes he will have.—DR. OSMUN in *Items*.

A Suggestion to Bridge-Workers.

A survey of certain systems of crown- and bridge-work of practical cases, etc., bears out the assertion that the laws governing stress and strain and the resistance of the materials used in bridge-work to withstand these forces are insufficiently known and understood by the specialist, who ought to be as well qualified for his work as the competent civil engineer is for his.

The method of assembling the several pieces to a bridge is the same for all bridges of gold and porcelain without reference to locality. The difference in construction being to flow additional gold where it seems probable there may be increased strain, but the rub of this criticism is that the flowed solder is not equal in strength to a rolled piece of platinized gold, the arms of which extend on to abutment caps or ferrules. This is a means of reinforcement to all anterior bridges that are to be subjected to the outward as well as upward strain which a vigorous person is very likely to bring upon such work, and which will in time be likely to cause fracture, without reinforcement.

Such pieces of straps of gold may be but one-eighth of an inch in width and artistically adapted along the backings of the porcelain dummies at the points beyond articulation of occluding teeth; and such pieces serve a double purpose, where the alveolar process has receded. They strengthen the work beyond possibility of fracture, and they prevent crowding in of food between bridge and gums as the bridge of ordinary construction does not, and yet, with the surfaces properly finished, the one is as easily kept clean as the other.—A. M. R., *Amer. Dental Weekly*.

Foil Folding.

I prefer pure sheet rubber about one thirty-second of an inch thick, so that whatever the foil number or the ply of the tape, its edges will not be harshened by the pressure of the folder-edge in the soft rubber pad—a fact of much practical importance.

On this pad, for instance, a sheet of No. 4 foil may be given four folds to make a sixteen-ply tape one-quarter inch wide, or a strip of half-sheet length and one inch wide may be given five folds to make a thirty-two-ply tape one thirty-second inch wide. Within the range of these widths of perfectly formed and pliable tapes of any desired ply, fillings of any size, shape or situation can be rapidly built with any chosen pluggers in accordance with any preferred method of operation. The ribbons are best annealed on a mica or thin metal platen, as direct flame-contact harshens gold foil.

The rubber pad can be carefully washed and kept perfectly clean, and will serve as a platen for tapes, which may be readily picked up by a slight pressure of the plugger-point on the yielding pad; but a two-and-a-half-inch square of the same thick rubber makes a more convenient platen for this purpose. The tapes may be rolled into cylinders of any width or diameter, but for general packing and gold-building purposes the straight, even, pliable, directly placeable tape is the *ne plus ultra*.—W. STORER HOW in *Cosmos*.

Case in Practice: An Object Lesson.

I have a little object lesson which I wish to present which may be of service to young men, or to careless operators, as I presume there are some in existence. It is a case of two superior bicuspidals that had porcelain crowns put upon them. The root of the one I hold here, as will be seen, is quite large and perfectly straight, but still the canal made for a Bonwill crown was drilled through the root, and the screw which was inserted passed through the opening into the soft tissue, and was in that position for three years, to the great discomfort of the patient. She told me there had been scarcely a month during the three years that she has not been to the dentist, who put on the crowns, for the treatment of those teeth. When I examined the case I found that one root had been perforated, and I made up my mind to extract both roots. The whole plate of the alveolar process was found to be destroyed, and still it had been treated for three years, and the dentist had hopes of curing it which I cannot understand. In selecting teeth for implantation I chose as long roots as I could obtain, but not being able to get much of a hold in the

process, as so much of it had been destroyed, I am in doubt about their success, although the operation was performed about six weeks ago, and the teeth are pretty firm. She says she has been able to masticate upon them, but I warned her about using them very much at present, as the hold is not sufficient. This work was not done in a so-called "dental parlor," but by a man who for years has prided himself upon being a very rapid operator.—DR. C. A. WOODWARD, *International*.

A Method of Using De Trey and Other Forms of Gold.

Many of us have misgivings about placing crystal gold at the cervical wall of our cavities. To those who have and practice using soft gold, by which I mean gold that has not been annealed, I would say place it upon the floor of the cavity and gently pack it in place without condensing. Make your cavity one-third full, then place upon it a light thickness of De Trey gold. Commence with broad-faced pluggers and gradually knead it in position. What I mean by kneading is gradual pressure upon the gold, carrying it into the cavity; then increase your condensing force until you are satisfied it is sufficiently condensed. The De Trey gold acts as a hub upon the soft gold and does not allow it to roll. If you want to finish it in that manner you can do so and work very rapidly.

—DR. GAYLORD, *Cosmos*.

The Clinic.

In an article on this subject, published in the *Cosmos*, Dr. E. P. Beadles makes the following suggestions regarding the clinic:

1. "Have provided only one chair, and have that placed upon a raised platform near the patient's seat.
2. Have only one clinic in progress at one time.
3. Let the society be in regular session during the clinic, with the president and other officers in their places.
4. Let each operator furnish beforehand to the manager of the clinic a list of whatever he needs to carry out his work.
5. Have placed on the platform a good blackboard.

Now with the members in their places the clinician is introduced and his intended operation announced. With the patient in the chair and with free use of the blackboard, he explains fully what he intends to do. At a certain time those who wish to examine the case are allowed to come up, one or two at a time; this over, the operator proceeds with his work. If it will consume some time another subject may be taken up by the

association, business transacted or a paper read, with the understanding that the operator can have the attention of the members whenever he desires it."

Treatment of Pulpless Teeth.

Dr. L. C. Le Roy read a paper before the New Jersey Society, giving a method of treating pulpless teeth. He states that in over four hundred cases he has not had a single failure. The method, published in *Items*, is as follows:

"A tooth may be presented for operation, and may be acute or chronically abscessed with fistula or without.

The rubber dam is applied, and free access to the canals established. The Donaldson pulp canal broaches are used in removing the *debris* present in canals, and by the judicious handling of same, they will follow to the apical end of quite tortuous canals. Should the broach bind at all tightly in one or more of the canals, "The Callahan Method," fifty per cent. sulphuric acid, is used until the desired enlargement of canal is attained. The bulk of sulphuric acid is then absorbed, and finally made neutral by using saturated solution of bi-carbonate of soda, carrying that into the canals the same as sulphuric acid, until effervescence ceases.

Should sensation be present in pulp canal, such as exists near apical end of recently devitalized teeth, or the presence of an apical filament of pulp, the sulphuric acid will act as an anesthetic and permit painless procedure.

The bi-carbonate solution is then absorbed, but not necessarily perfectly dried. Deliquescent crystals of carbolic acid are then used (carbolic acid—c. p.), and allowed to remain in the canals until the permanent pulp canal dressing of eucalypto-percha is prepared, which is done for each operation by using any of the low heat gutta perchas in eucalyptus oil, which is a solvent of gutta percha, hastened by gentle heating on the office sterilizer, or otherwise, in a watch crystal. Root canals are then dried *thoroughly* by hot air, and nerve canal drier, such as the Evans.

This *positively* accomplished, moisten the canals with eucalyptus oil (by cotton on broach), then carry the eucalypto-percha dressing in very plastic consistency into the canals by means of smooth broaches until all are filled. A few fibres of cotton may be carried into this and packed at the apical foramen, especially if the same be large. Follow this with a gutta-percha canal point, of proper diameter to admit of being carried and compressed in canal, for the eucalypto-percha will so quickly soften the gutta-percha cone that it will permit of compression, at the same time forcing the excess eucalypto-percha from the canals into pulp chamber.

The eucalyptus oil has the property of expanding the gutta-percha (the reverse of chloroform with gutta-percha) and this most positively fills the root canals. The excess material in pulp chamber is then absorbed with cotton, the oil eliminated from cavity by using alcohol. The treatment of the cavity in tooth is then progressed with as is usual with one's method."

New Method of Using Peroxid of Hydrogen.

In an article in *Items of Interest*, Dr. W. A. Mills gives his method as follows:

"Where the pulp has died from any cause otherwise than that intentionally produced, we proceed as follows: At the first treatment we remove all carious and liquid matter from the pulp chamber, being cautious not to enter the root canal.

We then saturate a pledget of absorbent cotton with Marchand's peroxid of hydrogen and place it loosely in the pulp-chamber; selecting an old steel instrument with sufficient face at the point to fill, or nearly fill, the entrance to the pulp chamber, we heat it red hot and place it on the pledget of absorbent cotton.

Immediately steam is generated, oxygen is set free, both filling the root canal with considerable pressure. This is repeated three or four times, or until the patient says heat and pressure are felt within the tissues, outside of the apical foramen.

We then cleanse the root canal, after which we saturate a roll of absorbent cotton with a solution of equal parts of the tinctures of iodine and aconite, or tincture of iodine alone, and work it into the root canal; behind this we pack tight a pledget of cotton; fill tooth with temporary filling and dismiss the patient for a few days.

When patient returns, if no inflammatory manifestations have developed, we remove all temporary work, swab out the root canal with the tannic acid solution, and fill with pink gutta-percha."

Root-Canal Filling.

Granted the canals are in an aseptic condition ready to be filled, they should be cleaned with peroxid of hydrogen, or some one of the several agents akin to it, that the gummy portion of the essential oils and other foreign substances may be removed, after which they should be thoroughly dried with absolute alcohol and heat, when the inner walls of the canals should be slightly moistened with eucalyptus, after which a very conservative quantity of chloro-percha of the consistency of thick cream should

be passed in. Then take the gutta-percha cone or point in a pair of pliers, and with a slight pumping motion press it into the canal as far as possible. Let it rest a moment. The chloro-percha and eucalyptus already there will soften the smaller portions of the cone, while that portion protruding from the canal should be softened with a few blasts of hot air from the syringe. then with the canal plugger cold or just slightly warmed so the gutta-percha will not cling to it and be drawn away, the softened solid gutta-percha should be thoroughly packed to the uttermost end of its future abode.—A. H. PECK, in *Items*.

Root-Canal Treatment and Filling.

Injecting the 1-10,000 bichlorid solution through the root until the canal and abscess seems clean, and then a fine broach with a little cotton, this to be dipped into a 40° solution of sulphuric acid worked up and down the canal a few times, then using an alkali bi-carbonate soda saturated solution, which brings away any foreign substance that might be lying in the root, after which use your bi-chlorid again until the cotton shows no stain. Then take a solution of chlorid of zinc, forty grains to the ounce of water and inject it in the abscess sac.

This you will find has thoroughly cleaned the canal and abscess sac of all pus and dead matter, and now the root is ready for *immediate* filling. No further treatment is required and all other treatments are a waste of good time, both to yourself and to your patient.

The method for filling the root is very simple and very successful as years of practice has proven.

The root is allowed to remain moist. The bi-chlorid and oxy-chlorid of zinc is mixed to the consistency of cream and pumped into the canal by the use of a smooth broach, care being taken to reach the apex of the root, this is allowed to crystallize when the filling for crown may be put in.—V. M. MURIER, *Dom. Journal*.

A Simple Treatment for Alveolar Abscess, with Fistulous Opening.

From an article by Dr. T. M. Jamison, published in the *Items*, we abstract as follows:

"In the first place fill root-canal. Locate abscess with a small probe or canal plugger. Dissect away the gum over the diseased bone, and with a round bur cut away all affected alveola, and if possible to reach the abscess, cut away a small portion of the apical end of the root.

Wash out the cavity thoroughly with warm water, to remove all debris. Inject peroxid hydrogen liberally, until all signs of the presence of pus have disappeared, and pack the cavity with iodoform gauze.

Adding two drops of the oil of cloves mixed with vaseline renders the iodoform nearly odorless.

This treatment should be repeated every twenty-four hours until the pus cavity seems perfectly clean. This can be determined by the injection of peroxid hydrogen, when a final dressing can be left in the cavity and it will heal without further treatment.

I have a record of one hundred cases treated in this manner without a single failure."

A Successful Method of Tipping Porcelain Facings especially adapted to Direct Occlusion in Crown- and Bridge-Work.

Grind and adjust facing in the usual manner, then with 32 g. 24 k. gold place on a backing (having the pins standing), and burnish over the cutting edge and fully on a level with the labial surface of the facing; then place on a backing 30 g. 22 k. plate exactly the same size as the first, and instead of burnishing over the cutting edge, let it protrude. Both backings being of the same size, this forms a groove along the cutting edge. Then bend the pins well down burnishing the sides. Invest (cutting edge uppermost) in either sand and plaster, or marble dust and plaster, entirely covering the porcelain; flow 20 k. or 22 k. solder along the exposed groove, after which the edge can be shaped with carborundum wheels or files in any way indicated by the occlusion. The edges can be finished so that little or no gold will show, and at the same time be an invaluable protection to the facings which are so easily fractured in cases of direct occlusion.

After having given this method a great many trials, I am convinced of its value, and offer it hoping to alleviate for some one a very annoying feature in crown- and bridge-work.—F. R. SANDUSKY, in *Items*.

The Prosthesis of Entire Dentures with Countersunk-Pin Teeth on the Vulcanite Base.

Dr. Allison R. Lawshe gives his method in the *Cosmos* as follows:

"After setting up the case in the articulator, I coat the model with gum tragacanth mucilage and cover it with a sheet of No. 3 tin-foil, rubbed neatly to place with a ball of cotton under the finger, and, with a thin sheet of wax pressed carefully to place to avoid forming places of

extreme thinness, as over the air-chamber and rugæ, I form the temporary base-plate and proceed to set up the teeth with especial care to attain a natural-looking arrangement. This accomplished, the wax forming the gums may be artistically modeled and carved with a small vulcanite scraper and the festoons formed by Dr. M. L. Fay's easy, yet effective, method, which is to arrange a waxed, closely woven cotton string about the necks of the teeth with a suitable instrument, uniting the string and wax with a spatula and smoothing the case with a fine blow-pipe flame; the string to be removed with the wax when the case is ready to pack. With the countersunk-pin teeth I employ this expedient with pleasing results on the lingual as well as labial and buccal surfaces; moreover, in a similar manner I form the rugæ, and the rim of the plate as well, by pressing short lengths of the string into the wax base-plate in imitation of the natural prominences. The size of the string forming the gum-festoons and rugæ is about No. 20 of the standard American gauge: or the rim about No. 15.

Having the case now articulated, waxed, carved, and festooned, and the rugæ and rim formed, it is to be smoothed with a fine blow-pipe flame, held under cold water a moment to chill the wax and soak the model, and invested in the shallow half of the flask, making the line of division of the two halves come at the rim of the plate.

After the investment has hardened, a strip of No. 3 tin-foil is lightly pressed against the labial wax and faces of the teeth with a ball of cotton, and trimmed about the necks of the teeth with a sharp lancet or knife-blade, removed, flattened, and laid upon a piece of heavy foil (I use No. 30), and the pattern marked out with a pointed instrument, cut out with a pair of shears, and a number of slits, extending about half-way through it, made from its lower edge, to prevent folding or crimping of the foil when it is pressed and burnished into position. After adjusting it to place—the foil having been warmed to facilitate that operation—it is lightly indented over its entire surface with a small plugger-point in the engine mallet, the mallet being set to make a very light blow.

On the linguo-palatal surface I use a sheet of No. 3 foil, and trim it about the necks of the teeth after pressing to place.

When the case is ready to pack the flask is heated in boiling water until it is certain the wax is softened sufficiently to offer not the slightest resistance to the separation of the two halves of the flask, when it is removed, separated, and as much as possible of the soft wax picked and wiped out, the remainder being washed out with a stream of boiling water. The teeth and foil are now freed from water with bibulous paper and the air-bulb, and finally washed with alcohol and dried before the packing of the rubber is commenced.

I use red or black rubber for the palatal surface and countersinks, which latter should, in packing, be very carefully filled with small pieces, and I form the labial and linguo-palatal surfaces of the Walker "granular gum" facing.

Of course, a considerable surplus of rubber should always be avoided, but it is particularly necessary to beware of a large excess when using the "granular gum" facing, because when that excess is squeezed out through the vents the particles on which the granular appearance depends will be elongated and the imitation of the natural gum lessened. I ascertain when I have the proper quantity of rubber by pressing the two halves of the flask together, and so do without tearing the thin foil covering of the model by painting it with liquid soap, the soap being washed away before the flask is bolted. The rubber is vulcanized at a temperature of 310° F.; time, one hour and a half.

The finishing of this denture is very simple. After the flask is cooled until there is no warmth left in the plaster investment, the plate is removed and washed, the heavy tin-foil covering the labial and buccal gums pulled off, and the thin foil removed by immersion in dilute nitric acid, when it is ready, after washing off the acid and drying, to have the slight excess of rubber removed, the gum-festoons trimmed with sharp chisels, and finally polished with a stiff brush-wheel charged with powdered pumice. Comparison with a typical upper denture of the average prosthetist, will show the advantage of some of the points I am trying to make better than I can tell them. In making lower dentures the "granular gum" is placed on the lingual as well as labial and buccal surfaces.

Concerning the subject of strength there can be no question. The counter-sunk-pin teeth are supported not alone by pins, but also by the walls of vulcanite around the necks and that filling the countersinks.

Another distinct advantage which the countersunk-pin teeth have over the sectional block and plain teeth is, the anterior and posterior teeth are made in different molds, so it is very easy to select molars and bicuspid large enough to make the denture which they go to form. a masticating apparatus in fact as well as in intention."

Points of Vital Interest to those Using Cataphoresis.

I desire to briefly summarize the points I feel to be of vital importance to the dentist in successfully applying cataphoresis: First, to understand the fundamental principles of the theory of electrical osmosis. Then to thoroughly know his apparatus; its relations to the current it receives, with especial regard to connection, shunts and resistance, being certain

for absolute safety that the current reaching the rheostat never exceeds twenty volts. The rheostat, particularly with reference to the control and steadiness of current. The milliamperemeter, to indirectly measure the resistance of the tooth, and to determine the amount of current. Next, the preparation of the field; its insulation from moisture, fillings, and appliances; its proper neutral or alkaline reaction. Then the reagent used: To properly select a preparation; to use a fresh solution and understand the liability to decomposition and those agents that assist decomposition; to select the proper dosage. Then to appreciate the value of a weak current, since it promotes osmosis and does not decompose the molecule. Finally, to study the temperaments of his patients—after which considerations he should be able to apply cataphoresis in a thoroughly rational and successful manner.—A. HOLBROOK, in *Dental Digest*.

BRIEFS.

“**Pulpal Wall**” is a new term Dr. Clayton suggests, (*Ind. Dental Journal*) for that portion of tooth tissue lying between the cavity and the pulp.

Treatment of Pyorrhea Alveolaris.—Where the teeth are very loose Dr. R. Cool extracts them, deepens the socket and replants. Has good results.

To Cut Cavities in Porcelain Teeth.—Dr. C. A. Clark cuts the teeth with steel discs of various diameters, and uses superfine carborundum powder moistened with water.

Filings for Filling Crowns.—For filling cusps in gold crowns, there is nothing better than fine gold filings, with a little gold solder intermixed.—*N. N. Vann in Am. D. Weekly*.

Keep Your Soles.—When your rubber overshoes wear out, keep the soles. Very handy if fastened on a block convenient to use. The heels make good bench blocks.—*Dom. Journal*.

Application for Perspiring Hands.—Borax, salicylic acid, of each 15; boric acid 5; glycerin and proof spirit, of each 60. Apply with rubbing three times daily.—*Les Nouv. Rem.*

To Improve a Mandrel.—The disk holder or mandrel may oftentimes be used more advantageously if the head or screw that holds the disk is dressed down a little.—*W. A. Heckard, Ind. D. Jour.*

To Remove Stains.—To remove the stains of mineral waters, fruits, berries, tobacco or tartar, which will accumulate on artificial teeth, use a stiff tooth-brush, soap and pumice once a day.—*J. L. M. in Dental Weekly.*

After Extracting Abscessed Teeth always syringe the sockets with hot water and an antiseptic. Especially is this wise in the lower jaw, where by gravitation pus may remain in a socket after extraction.—*Dom. D. Journal.*

To Make a Good Polish on Fillings.—In putting on the final polish I use a rouge-coated paper disk. This polishes a filling smoother and better than anything that has yet been brought to my notice.—*W. A. Heckard, Ind. D. Journal.*

Use Fine Silk for Retaining Implanted Teeth.—Dr. Cool says dentists use ordinary dental floss, but this swells and acts as an irritant. I advise those first commencing to use silk to use A, then O, OO and OOO.—*Medico. Dental Gazette.*

Hand Pressure or Mallet in Making Amalgam Fillings?—In reply to this question Dr. Wedelstaedt says that it depends on circumstances, though he generally uses a mallet when filling upper teeth and hand pressure on the lower.

Wear Kid Gloves in the Laboratory.—Keep your old kid gloves and wear them when sand-papering or polishing artificial sets. Rub vaseline into your finger-nails, and over your fingers before putting on the gloves.—*Dom Journal.*

An Absorbent.—Get a new ink-blotting pad, break down the stiffness by rolling it roughly, and with the pliers pick off pieces the size of the cavity, and you have an absorbent almost equal to the manufactured variety.—*J. A. C. in Dental Weekly.*

Management of Deciduous Teeth.—Dr. Newkirk filled a cavity in the inferior deciduous first molar, using a combination filling of cement and amalgam, lining the cavity with cement and finishing the main body of the filling with amalgam.—*Dental Review.*

To Prevent Plate Irritation.—The buccal edge of a plate should not be made sharp, but rounded. After a sharp edge plate has been worn a while it divides the fold of membrane under the cheek longitudinally, as if done with a knife.—*Dental Weekly.*

Aceto-Salicylic Acid, which is claimed to possess powerful anti-septic properties, is prepared by Limpach (*Phar. Rund.*) by decomposing sodium salt of orthooxy-benzonitril or of ortho-oxybenzamid with

monochloracetic acid and decomposing the acid amide or nitril group by boiling with soda solution.

Grinding Elongated Natural Teeth.—As a rule I oppose the grinding of elongated natural teeth, because in so doing the crown loses its cusps and depressions, and we have a flat surface. This must be opposed, of course, by a flat surface, and flat surfaces are not suitable for the grinding of food.—*L. Ottofy, Dental Review.*

Stationary Apron.—Tack a square piece of bed-tick or apron cloth under the part of the bench where you work. It will always be there. Pull it over your knees when you sit there to work. Keeps your pantaloons clean, and often keeps you from saying naughty words, as it catches teeth you might drop on the floor.—*Dom. Journal.*

The Cause of Root-Splitting.—We hear a great deal about banding roots to prevent them from splitting, but observation would seem to warrant the conclusion that roots split only when they are subjected to excessive strains, and then in most cases they have been weakened by having their strength unnecessarily impaired by reaming.—*D. D. Atkinson, Dental Weekly.*

Repairing Vulcanite Plate.—For repairing vulcanite plates, bevel the broken edges with file or scraper, then with a clean iron spatula heated, the new rubber can be spread on the beveled edge nearly as easily as we spread wax. The new rubber adheres firmly to the old and much time is saved in getting the case into the vulcanizer.—*W. H. Bailey in Dental Weekly.*

A Collutory for Painful Dentition.—The *Journal de Medecine de Paris* for January 23d describes this formula to Chompret:

R	Cocain hydrochlorid	2.25 grains;
	Chloroform	15.00 “
	Glycerin	300.00 “
	Oil of roses	6 drops.

Investment—Breaking and Mending.—Occasionally, in soldering, a portion of our investment breaks off, exposing a part of a tooth. We can ill afford the time to patch the break and wait for the plaster to harden again. The exposed portion of the porcelain may be perfectly protected by covering it with a thick paste of chalk and water. This mixture may also be used to fasten small pieces of gold to the solder-block while soldering.—*Dental Weekly.*

Investing Compound.—I make all my investments, whether for big pieces or little pieces, out of nothing but Teague's Impression Com-

pound. It will protect your porcelains and stand all the heat you may apply to it without cracking or shrinking, and you may begin to heat it in five or ten minutes after mixing. I don't use Teague's Impression Compound for anything but investments, but it beats the world for that. *E. G. Quattlebaum, Dental Weekly.*

Arsenic in Cement.—Dr. Prothero, before the Chicago Dental Society made the statement that tests revealed the presence of arsenic in most of the cement powders now on the market. Marsh's test is the one he applied. As it is a simple test, any one can make it, and prove or disprove this assertion. It is apt to be true, as arsenic is usually present in commercial oxid of zinc.

Can this be the reason why so many pulps die under cement fillings? *Dental Weekly.*

Prevention of Decay by Use of Germicides.—I have repeatedly pointed out that, in my judgment, the greatest hope for the future in the saving of human teeth lies in the direction of prevention of decay by the use of germicides. In my own practice, I have relied chiefly upon a strong solution of hydronaphthol in oil of cassia. This I use freely in all cavities, and then, before filling, I use a varnish of Canada balsam in chloroform in which there is ten per cent. of hydronaphthol.—*J. Leon Williams, in Items.*

How to take an Impression in Cases of Fractured Jaws.—Dr. Dorrance, of Michigan, devised a scheme for taking the impression which seems to me very good. He always takes it with plaster, regardless of the position of the parts. After the model has set he saws it in two at the point or points of fracture. He then adjusts the pieces in the position which he thinks is correct and vulcanizes his rubber splint. By this method it is unnecessary to adjust the parts before an impression is taken.—*H. F. Hussy, Ind. Dental Journal.*

Cleanse the Teeth Before Inserting Fillings.—Dr. Garrett Newkirk, of Chicago, writes to us as follows: "I note that a writer in your January issue advises the cleansing of the teeth to be included in the rubber dam, before operations are begun. In addition however to mere rubbing with bibulous paper, let me suggest the use always of alcohol, and sometimes pumice powder. It is my belief that the teeth should never be filled without first thoroughly cleansing all surfaces in the vicinity of the cavities."—*Items of Interest.*

To Crown Hollow Roots.—When a very "hollow" root presents for a pivot-crown, fit the latter as best you can, after filling the root, then lay aside. Roughen the thin walls of the "hollow" where there is least

danger of perforation. Now insert a soft wood pivot whittled to the shape and size of the metal pivot in the crown and around it pack amalgam to the margin of the gum. When it becomes hard drill out the wood and place the crown, which may now be done easily and satisfactorily.—*B. H. Teague, in Dental Weekly.*

Approximal Cavity Beneath the Gum.—Dr. Pruyn illustrated a method of placing the rubber dam in extreme cases of approximal decay. The cavity operated upon was a deep mesio-occlusal in the inferior first molar; cocain was applied locally and the hypertrophied gum between removed freely. An orange wood wedge was then inserted between the two teeth, almost if not quite to the process. The rubber dam was then applied, one hole in the rubber passing over both the molar and bicuspid beneath the wedge.—*Dental Review.*

Partial Crowns.—Where the teeth stand alone in the arch I often make them and would often use them as an abutment for a bridge; but seldom would I do so where they approximate other teeth. I use them seldom there because of the difficulty of avoiding interfering with the interproximate space and contact point, which would be the means of causing a favorable point for the accumulation of food. Where the teeth set close together I rarely use such a crown; where a tooth stands by itself I oftentimes do, and consider it good practice.—*C. S. Case in Dental Review.*

Open Faced Crowns.—The lingual cusp of the tooth, to be operated upon, is cut quite freely away, to give a flat base for the crown, and an impression of it taken in gutta-percha—the tray being made of a thin strip of metal. The tray with its contained gutta-percha is forced high up on the tooth—up under the free margin of the gum. When the impression has sufficiently hardened it is then removed and invested in plaster, tray and all, and a Mellote's metal model run up. To this model heavy pure gold foil is burnished to an accurate adaptation when it is carefully removed and invested in investment material. To the back of the foil is then sweated clasp metal to the desired stiffness.—*J. S. Bridges, Review.*

Stamping the Grinding Surface of Gold Caps.—Take a cuttle-fish bone, and with a ribbon saw split the bone and press the plaster tooth into the inner surface of the bone, made available by the split. This will give a depressed impression of the cusps. Then cut gates for the impresses and place together another portion of the slab split off. You have a simple little ingot, and with fusible metal that will melt at boiling water point you obtain a metal die; very simple, but quickly made and

very efficient. If one has a number of plaster teeth in a model and desires to use one or more, split off the number needed for use and proceed as described.—*Dr. Hillier in Digest.*

Care in Enlarging Root-Canal.—If we are to use the crown with the post, we should be careful of two things: First, in enlarging the canal, the enlargement should be carried toward the palatal portion, for in the anterior teeth, at least, the direction of the force against them is outward, and if the anterior segment of the root be weakened it is liable to fracture; second, the post should be as long as possible and flattened, because a round post is needlessly strong in its transverse diameter, and not strong enough, unless too large, in its antero-posterior diameter.—*A. M. Tutt, in Dental Digest.*

The Way the Powder for Oxyphosphate Cement is Made.—Pour strong nitric acid on oxide of zinc and stir until effervescence ceases; after a few hours, heat in porcelain crucible until red vapors cease, then raise to a white heat and cool gradually, allowing from six to ten hours. The crucible will require to be broken away from the hard stony mass inside, which, when pounded and very finely pulverized, constitutes cement powder. Mix this powder with syrupy phosphoric acid for use. No doubt finely powdered silica or other materials of the same nature are also added by various manufacturers.—*British Journal.*

Importance of Finishing Fillings.—Many good fillings have been prematurely lost by not giving them a smooth finish. If you will take a delicate plug trimmer and pass between the teeth, you will surprise yourself to find how often small particles of gold are left in grooves that cannot be reached by emery strips or sandpaper disks at the free margin, or just under the free margin, of the gum, thus creating storehouses or receptacles for the lodgment of food, to ferment and work destruction to the tooth just completed, causing the patient soon to return, complaining of the filling giving way.—*A. D. Crutcher, Headlight.*

Accurate Method of Fitting Logan Crowns.—The tooth to be crowned is ground below the level of the gum all around, convex labiolingually. The canal enlarged to accommodate a Logan pin. A temporary pin, long enough to reach to occlusal edges of the adjoining teeth, is placed in the canal and a plaster impression taken which withdraws with it the temporary pin. A Mellotte's metal model is run into this impression. This gives an accurate model of the end of the root with the temporary pin in correct position. The pin is then withdrawn which gives direction and location of the root canal. To this metal model a Logan crown can be accurately and quickly ground up.—*C. J. Sowle in Dental Review.*

A Method of Strengthening Platinum Caps of Porcelain Crowns.—In constructing a cap for a root upon which you mount a porcelain crown, make it of very thin platinum to get a more accurate fit. This cap is afterwards strengthened by a solder composed of platinum and gold. For soldering the parts of the cap together use a solder composed of forty parts of the platinum and sixty parts of gold. For strengthening the cap use a solder composed of twenty parts platinum and eighty parts gold, which is flowed on the sides and floor of the cap until the desired stiffness is attained. Both these solders will stand the heat of fusing Close body.—*W. B. Ames, Dental Review.*

How to Obtain Perfect Articulation for Bridges.—When a bridge is being made, the impression is taken with Mellotte's compound, of all the opposing cusps necessary (this can be taken from the model), and a strip of pure gold is struck up to extend over the whole length; it is then cut into pieces and each piece is used as the cusp for the corresponding crown or dummy. The result of such work is, that the bridge articulates perfectly everywhere, and I have placed a piece of wax between the dummy and crown cusps of a completed bridge in the mouth, and the opposing cusps and found it completely squeezed out by the exactness of the occlusion.—*Louis Ottofy in Review.*

How to Use Eucain and Cocain.—It is an advantage to dilute cocain solutions to the lowest effective dilution, but eucain solutions should be only so dilute as to give necessary bulk for proper administration, and to keep well within the dosage limit. I have not used to any extent less than 5 per cent. solutions of eucain, because I don't see how it would be practical to reduce the strength and keep up its potency, and besides the injection of any considerable quantity of a dilute solution would produce a corresponding increase of irritation and therefore a reduction of its potency; its obtundent action would be delayed. It would seem therefore that so far as dosage and narcotizing influence is concerned we must concede the advantage to cocain.—*N. S. Hoff, in Dental Review.*

Adjustment of Logan Crown.—The root for crowning should be trimmed as desired, beveling the canal a little at the end; take an impression (I use a cartridge shell); from it make a die and counter-die; swage a piece of gold between them, put on root and burnish close. This will form a ferrule, protecting the entire end of root. Leaving the cap on root, take the crown and burnish over its end a piece of gold to fit perfectly as a cap; now put soft wax over it and adjust to root, placing the crown in exact position; let wax harden, remove, trim as you would have it look when finished, remove both caps from crown, invest and flow

solder in place of the wax ; place on crown and soft solder to pin, polish, and crown is ready for adjustment—perfect in all points.—*G. A. Harper, in Items.*

Method of Replacing a Broken Richmond Crown.—The band on the labial surface is ground entirely away, exposing the beveled edge of the root. The backing ground is about one-half its original length and to the shape of an inverted cone. A second band is fitted over the old one, extending slightly beyond the gum on the labial aspect only ; elsewhere it extends just to the gum-margin. On the lingual surface it is made to conform to the original outlines, and is extended a trifle beyond the backing. The band being fitted and soldered, a thin porcelain facing is selected and ground to fit the exposed root. It is then backed and soldered to the band, and we have practically a Richmond crown without a pin. Before setting, the old backing is roughened and the edges notched to afford more secure attachment for the cement.—*J. M. Fogg, Cosmos.*

To Remove a Broken Richmond Crown.—Grind the solder on the lingual surface down to the point where the pin passes through the disk ; concave the gold slightly at this point when a Hern's trephine, placed in the dental engine and rotated around the pin, will cut through the disk, and may be extended into the root a short distance. This severs the union between the disk and the post, which latter may be removed by a slight twisting and retracting force applied to the post by a Hern's broken-pivot extractor. A short section of gold and platinum tubing may then be fitted to the post, passing through the disk around the post, and into the enlarged opening in the root. The relation of post tubing, and disk with the new facing may be secured with fluxed wax and the and the parts invested and soldered, making the fixture and anchorage even stronger than the original.—*G. F. Harwood, Cosmos.*

Adjusting the Rubber Dam.—Do all your chiseling, grinding and separating, if possible before putting on the dam. Most persons do not fancy having on the rubber any longer than is absolutely necessary, and without it the coarse debris can be washed out, and afterwards you have not a soiled dam to work over. After cutting or punching the requisite apertures for the exposed teeth, moisten them on the inner surface with soap.

The nicest method is to have in a small glass ointment jar a quantity of ivory paste, made by dissolving one and one-half ounces of ivory soap in one pint of hot water. Many a troublesome adjustment may be avoided by this simple expedient. When in position, annoint the lips with white vaseline and place a napkin under the rubber ; the patient is thus as comfortable as possible.—*L. F. Dolebare, in Items.*

Cane Sugar and the Teeth.—There is a common belief that this is injurious to the teeth, and that sugar-candy is positively destructive to them. No greater mistake could well be made. Cane sugar is not only unfermentable before it is changed by the action of the digestive ferments, but it absolutely prevents fermentation. The housewife preserves her fruits and her delicacies by its means, and sugar-cured meats are well known to everyone. If candies are pure, and are made from cane sugar, they will be preservative of the teeth, and may be recommended for that purpose, provided always that the teeth are properly cleaned after they have been taken, as they should always be after eating. It is the adulterated candies that do injury to the teeth. The use of too much sugar is bad for the digestive organs, and through them may act deleteriously upon the teeth, but these organs were never directly injured by pure sugar or candy.—*Dental Practitioner and Advertiser.*

How to Remove Bridge Abutment Crown for Repair.—The removal of a gold crown which serves as an abutment for a fixed bridge which comes to us for repair on account of disrupted joints, or broken facings, may be, with the instruments commonly at hand, a difficult and tedious operation.

By the aid of a pair of crown-slitters this may be easily and quickly accomplished. The long concave back of the instrument being placed on the cusp of the crown to be removed, the cutting blade is pressed against the cervical edge, and just enough force applied to slit the band nearly to the point where it turns to meet the cusps. As the slitting blade forces its way through, the band is wedged apart and the cement attachment is broken up. A slight pull with a retractor or hoe-shaped excavator placed against the cervical edge of the band, on the side opposite the slit, will suffice to accomplish its removal.—*G. F. Harwood, Cosmos.*

In Memory of Dr. W. B. Chambers.

At a meeting of the dentists of Newark city and county, held at the office of Dr. R. A. Barrick, February 10, 1898, at 7 o'clock p. m., the following preamble and resolutions were unanimously adopted:

WHEREAS, It has pleased the Creator and final disposer of all things to remove from this world our brother, Dr. W. B. Chambers, of Newark; therefore be it

Resolved, That we bow to the will of Almighty God and yet desire to emphasize our grief in the death of our professional brother, and to bear testimony of his abilities as an operator and mechanic, which were of such high standard, that he had but few equals and no superiors. The death of Dr. Chambers removes from the group of dental practitioners of Licking county, one who was universally respected and admired for his professional abilities by his brother dentists, as well as the public generally, and one whose place will be hard to fill.

Resolved, That we extend to his bereaved wife our sincere sympathy, and with reverent humility we commend her to Him who alone can all her sorrows heal.

Resolved, That as a token of respect we all close our offices at 12 o'clock noon, on Saturday, and attend the funeral of our late brother.

Resolved, That a copy of these resolutions be sent to each of the daily papers, and also to several of the dental journals, and a copy be transmitted to the widow.

DR. McCLEERY,	} Committee.
DR. WOODS,	
DR. BARRICK,	
DR. SEDGWICK.	

New Publications.

A TREATISE ON IRREGULARITIES OF THE TEETH AND THEIR CORRECTION, including, with the Author's Practice, other Current Methods, By J. N. Farrar, M.D., D.D.S., New York. The International News Company, Publishers. Volume II. Price, full cloth, \$6.00; half morocco \$8.00; sheep \$8.00.

At last we are enabled to tell our readers that the second volume of Farrar's great work on Irregularities is completed. It is uniform in style and binding with Vol. I, and contains 830 pages and about 800 engravings. The work is a continuation of Volume one, and begins with page 739. To describe briefly the contents of the book we cannot improve upon the author's prefatory remarks and we will quote in part as follows:

"In the first fourteen parts of this treatise are given a com-

prehensive consideration of Irregularities of the Teeth and the theory of their correction, including the principles of mechanism that are necessary for carrying out operations. In the following three parts the application of these theories and principles to practice may be found.

"The aim has been to aid in the advance of this branch of dentistry by so clearly explaining the most important steps in operations, that the reader will have little or no difficulty in understanding the entire processes. Throughout the treatise conservatism in everything has been the intention. The teachings are strictly confined within scientific limits—a range which, if understood, is intended to enable the progressive student to accomplish the best results in the easiest way, with the least inconvenience to the patient and operator. In order to present the most useful of the different phases without going into unnecessary detail, the majority of cases have been explained in a plain, brief way, mainly showing the starting stages of the operations, with perhaps a few suggestions in regard to the alterations in the mechanisms that are requisite to meet the varying changes in the positions of the teeth during the process of the operation.

Effort has also been made to show in diagnosis and prognosis the distinction between that which *ought* and that which *ought not* to be attempted, and that which *can* and that which *can not* be done, and that which is *possible* to do and that which is *best* to do. So, also, there is shown the difference between regulating machines that will accomplish the desired result and those that will easily and conveniently accomplish the best results in the least time consistent with safety to the teeth and sockets. This has been done to show the difference between low skill and high skill, low art and high art. These grades are mainly based upon the differences in mechanisms and their action for accomplishing the same results. There are represented many operations by those that act by continued force, and many that act by intermittent force.

Throughout this original work (for it is no sense a compilation) the aim has been to place together all similar operations, by all kinds of mechanisms. To make the different parts of the treatise harmonize, the classification of all cases treated by similar mechanisms is arranged so as to correspond, so far as practicable, with the classification of the mechanisms illustrated and explained

in the parts treating upon the construction of mechanisms. First, for example, are presented the cases that were corrected by plates, and then those corrected by strings and elastic rubber, in various forms, after which those corrected by wire springs in combination with various kinds of anchors, and finally those corrected by screw-acting mechanisms.

The author's aim has been to make principles plain by giving special attention to details. He believes that there can be no clear understanding of principles except through clear knowledge of details. Without this clearness no man can be master of even a single branch; in fact, so closely related are details to general principles—and, conversely, general principles dependent upon details—that may be regarded as one. Considerable attention has been given to the importance of starting operations upon the right path. A detailed presentation of blunders made by operators, through lack of ability, are seldom referred to and never dwelt upon. The aim has been to point out straight paths to success and not the crooked and roundabout ones, though they may have finally led to success. As is well known the most essential requisites to success are correct diagnosis and correct plans of work. The importance of knowing the causes, and beginning the operation on the right line, and not starting until that line has been found, cannot be overestimated."

The book seems very complete in every detail and is written in a terse style that is satisfying and pleasing. The illustrations are made from working models and illustrate just what the author wishes to advance. It is the most complete treatise on the subject extant, and we shall look forward with anticipation to the publishing of the third and last volume. Dr. Farrar deserves the thanks of the whole profession for supplying such a great work on this interesting and important subject.

Typographically the book is a model of fine workmanship, and the binding is excellent. Every progressive dentist should have these volumes in his library.

THE YEAR BOOK OF TREATMENT FOR 1898. A Critical Review for
for Practitioner of Medicine and Surgery. 488 pages. Cloth
\$1.50. Philadelphia and New York. Lea Brothers & Co.,
1898.

The value of this book far exceeds its very modest price, for it forms a critical and trustworthy epitome of a year's progress in all branches of practical medicine. That it has performed this service acceptably is evident from the demand which has rendered necessary the publication of fourteen consecutive annual issues, and it may be truly said that the possessor of the series enjoys the advantage of a corrected view of medical advance, always fresh and brought up to the latest date by each new volume. The entire domain of practical medicine is thus annually covered in a series of twenty-five chapters, each being assigned to a recognized authority who gives in full detail all that is new, tried and true, with a critical statement of the comparative value and applicability of the various drugs, formulæ and methods of treatment.

The work is systematically arranged and well indexed, thus furnishing a ready reference handbook of greatest convenience and reliability.

CONVERSATIONS ON ANIMAL LIFE. (Semi-Scientific.) By A. J. Howe, A.M., M.D., Cincinnati: The Robert Clarke Co. Pub., 1897. Price \$1.50.

This book while intended for young folks, is equally interesting and instructive to older people. It comprises a series of talks about insects, birds, animals, reptiles and fishes. "Uncle Dan" is the narrator and his conversation is directed to his nephews and niece. He takes them into the highways and byways of the country and describes the hundreds of things in nature that they see. Dr. Howe tells these things in a manner and style that is captivating and the talks are full of instruction.

The book is profusely illustrated and there is that happy combination of stories and pictures that best impresses the truth on one's mind.

Dr. Howe was one of Cincinnati's best known citizens and this book is the result of improving leisure moments, during the latter years of his life, in writing out descriptions in natural history, not only for diversion of mind, but for his own amusement as well. The book is well printed on the best of paper, and the binding is superb. It is not only a valuable work for the home, but for the reception-room table in the dental office.

SOCIETIES.

Eastern Indiana Dental Association.

THE next meeting of this association will be held at Muncie, Ind., May 3 and 4, 1898. The program in part is as follows:

PAPERS. Oral Surgery, R. T. Oliver; Popular Dental Education, D. L. Stone; Antiseptics, L. P. George; Dental Societies, N. S. Cox; Golden Rule in Dentistry, W. P. Jay; Surgical Treatment of Cleft Plate, F. S. Martin; Anesthetics, F. M. Spark.

CLINICS. Use of English Tube Teeth, F. R. McClanahan; Clinical Lecture on Cataphoresis, S. T. Kirk; Amalgam Filling, R. R. Blakeman; Making Regulating Appliances, A. Jameson; Soft Gold and Tin and Gold Filling, J. R. Clayton; Treatment of Pyorrhea Alveolaris, J. E. Cravens.

This meeting promises to be the best yet held, and an urgent invitation is extended to all dentists to attend.

Greensburg, Ind.

H. M. THOMPSON, *Secretary*.

Illinois State Dental Society.

THE thirty-fourth annual meeting of the Illinois State Dental Society, will be held at Springfield, May 10-13, 1898. Dentists practicing in the State of Illinois who are not members of the society and dentists of other states are cordially invited to attend. Hotels and railroads will make the usual reduction. A large attendance is desired and a profitable meeting is anticipated.

92 State Street, Chicago.

A. H. PECK, *Secretary*.

Iowa State Dental Society.

THE annual meeting of the Iowa State Dental Society will be held in Des Moines May 3, 4, 5, 6, 1898.

WILLIAM GILMORE CLARK, *Sec'y*.

Tri-State Dental Meeting.

TO BE HELD AT PUT-IN-BAY ISLAND, JUNE 21, 22, 23, 1898.

HOW THE ISLAND RECEIVED ITS NAME.

TRULY it might be said that at Put-in-Bay was the pivotal turn in the great struggle of 1812. It was in open lake—in full view from the upper stories of Hotel Victory—that Commodore Perry met and defeated the English on the memorable 10th of September. After the battle he “put in” to the bay, and sent his historic message: “We have met the enemy and they are ours.”



Commodore O. H. Perry.—Private Banquet Room Hotel Victory.—Veranda, eighty feet above the level of the lake, and overlooking it toward Kelly's Island.

An appropriation from the last Congress has supplied to the Park Commissioners of this historical Island eight large cannon, each with an interesting history, to be placed at and around Perry's Willow, which stands in the lake front park on the Island, to mark the resting place of three American and three British officers who were buried under the bending boughs of this grand old tree, and who gave up their lives in the great struggle which holds so prominent a position in American history. Visitors to the Island this season will note with delight this marked recognition of respect.

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CONTRIBUTIONS.

Another Case of Reproduction of Alveolar Tissue.*

BY G. LENOX CURTIS, M.D., NEW YORK.

PATIENT, Mr. X., aged 55, Montreal, 18th March, 1896. History of case referred to me by Dr. W. Geo. Beers and Dr. Craik, of Montreal.

Twenty years ago patient contracted syphilis, for which he was apparently successfully treated. After this he was in robust health until seven years ago, when suddenly the left side of his face became badly swollen, and soon after a discharge of pus flowed from the nose and throat; his breath was extremely offensive and nauseating; throat sore with annoying cough which led to bronchitis, which became chronic. From time to time, after a lapse of several months, the swelling in the face would recur, the discharge from the nose and offensive breath being constant, general discomfort and loss of vitality followed until January of 1896, when his condition became debilitated, although under the constant supervision of his physician, when he was referred to Dr. W. Geo. Beers to have some troublesome teeth extracted. The superior left incisors and cuspid were removed, being only attached to the gum. About this time his cough became exceed-

* Read before the Vermont State Dental Society, March 18th, 1898.

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

ingly troublesome, his bronchial symptoms exaggerated, and general health bad.

Dr. Beers detected dead bone in the jaw of considerable magnitude, to which he called the attention of Dr. Craik, Mr. X.'s family physician, and advised a consultation with me. Dr. Beers douched the wound daily for six weeks, during which time the patient's general health somewhat improved.

Examination took place March 18th, 1896. I found cough harsh, expectoration profuse, appetite very poor, patient extremely debilitated, showing signs of long suffering and the effect of pus upon the system; exaggerated signs of pyæmia not present, yet sufficiently to show long suffering from blood poisoning. The left side of face was slightly swollen, which patient stated it had been for several years; there was a large opening in the floor of the nares, extending back to the soft palate, through which pus exuded and the rough necrosed bone could be readily detected. The area involved was from the base of the malar to the second bicuspid extending to the median line, and as far back as the soft palate, involving the entire bony structure. The odor from the breath was sickening, caused by the extensive discharge of pus from the gums and nose, the pus being black and thin in character, the first superior bicuspid black, dead and abscessed; the second bicuspid and wisdom tooth vital and in good condition; the first and second molars missing and with gums healed; the mucous membrane hypertrophied, congested and of purple hue; the color around the wisdom tooth normal. The probe passed in the wound where the teeth had been extracted passed back into the throat and on either side of the sequestrum; all the bone on this side of the jaw, anterior to the second bicuspid was destroyed, although the walls of the antrum were not penetrated. The left nares was nearly closed, due to a deflection of the septum, with a large nasal spur, and pressure on the periosteum in the region of the inferior turbinate, with a well defined line of demarkation formed around the sequestrum.

Operation—The patient was given ether by Dr. J. G. McCarthy and I was assisted by Dr. Beers; Mr. X.'s physician being present. The dead bicuspid was extracted, a denuder passed between the dead and living bone to thoroughly free the periosteum; then with a heavy pair of forceps the sequestrum was firmly grasped, gradually loosened and removed; this was fol-

lowed by a fierce gush of blood, fully one pint in all, the vessels having disgorged themselves in about a minute, when the entire surface of the wound was curetted, granulations and debris removed, the hemorrhage being checked by hot water, the wound was sterilized with hydrogen peroxide and firmly packed with iodoform gauze. Time of operation ten minutes; time between first inhalation of ether until patient was conscious, twenty minutes. Dr. Craik expressed himself as being highly gratified with the operation and thanked me for allowing him to see it, and said it was the cleanest operation he had ever seen on the jaw, and the only one without cutting through the face. The patient made rapid recovery, no fever or untoward symptoms following the operation.

The case was redressed on second day, and on Dr. Beers' strong recommendation, I used for the first time "Pheno-Banum," a preparation composed of carbolic acid, Balsams of Peru, Tolu and Benzoin, which was supplied by Dr. Henry Ievers, of Quebec, and found it to be of much value in retaining the dressing in place. The case was seen by me for three days in succession and redressed with the same preparation, the effect of which was very marked, as healthy granulation had set up under its influence on the third day, there being no pain or inflammation when I left the case in charge of Dr. Beers, who continued the same treatment; the wound rapidly healed, new tissue filling in except in a very small space between gum and nares, through which the probe could be passed, the bone having been very nicely reproduced.

On May 29th, 1896, Mr. X. came to my office in New York for correction of nasal stenosis; I took away a large spur from the left side of the septum, and removed most of the left inferior turbinate, also curetted and treated the opening in floor of nares, which healed kindly and completely closed. The patient was under treatment until June 9th, when he returned to his home in good condition and applied to Dr. Beers for an artificial denture to restore the contour of the face and missing teeth. I have since learned that Mr. X. is completely restored to health. This is another example of reproduction under certain treatment.

Diagnosis Errors.*

BY W. GEO. BEERS, L.D.S., D.D.S., MONTREAL, CAN.

DIAGNOSIS, is the process of discovering a disease and its distinction from other diseases, by its characteristic signs and symptoms. Not only to know inflammation of the pulp from hyperæsthesia of the dentine, but scientifically to explore and explain the reasons for our conclusion. Repeated familiarity with the same disease may enable a dentist, as well as a physician, to direct and accurate diagnosis. In other cases, where the origin of the trouble is obscure and a disease has subjective symptoms resembling other diseases, the diagnosis has to be more or less differential. Simple gum boil, in some of its signs and symptoms, resembles alveolar abscess. We observe the symptomatology essential to the one and not to the other, and summarizing them we form our conclusions. The pathognomonic signs, those which specially characterize a disease, are the chief guides in differential diagnosis.

From the point of view of scientific fairness, it is no exaggeration to declare that the wisest dentist is not the one who never makes mistakes, but he who rarely makes the same mistakes the second time. Error and failure are necessary stimuli to fact and truth. The men who say they never err are men who, perhaps, do not know that they do not tell the truth. There are occasions when we find ourselves overlooking, and perhaps interloping upon territory not our own; and yet we should be ashamed of our ignorance if we do not possess sufficient knowledge to discriminate between the simple and the complicated, between that which demands our attention and the signs and symptoms which rebuke our meddling. Diagnosis may be as simple as direct, yet entirely devoid of the least pretence to the scientific. Any one can distinguish a case of severe odontalgia of an exposed pulp from a case of pericementitis, without understanding the scientific procedure by which the conclusion is arrived at. I think, that as a science in dentistry, the art of diagnosis is overshadowed by the fascinations of its practice. I doubt if, as a profession, we systematically adopt that precise and methodical

* Read before the Vermont State Dental Society, March, 1898.

examination, direct and differential, of obscure cases, which is exacted in medical diagnosis. This is due to our circumscribed methods of education as well as of practice. As a rule, the diseases of the teeth are not alarming enough to prognosticate death, or even dangerous illness, and when they involve serious complications they pass out of our observation and care. Since medical men have surrendered the care of the teeth, neither dentists nor physicians know as much about their pathology in a scientific way as they would were all dentists medical men, and all medical men dentists. The latter lack the discipline and development of a medical and surgical curriculum, and what they learn of either is but a disjointed smattering; the former treat the teeth with even more contempt than they treat corns—that is, the teeth in health or after general illness may go to the dentist, or the devil, for all they care. The disabilities under which the dentist labors in diagnosis are apparent. Quite as much so if the educational methods and environment of the oculist had confined him as narrowly to the eyes as those of the dentist have confined him to the teeth. When we know that most of the diseased conditions of the teeth are but characteristic of diseases elsewhere; that they represent the same departures from normal physiological action as diseased conditions in other parts; that the boundaries of our pathology extend to the entire head and neck, the stomach, etc., we should recognize the important fact that while practically our art has its limitations, dental diagnosis has none. The mouth has no more a fixed and unalterable standard of health than the lungs or the liver. There are the same variations and adjustments to varying circumstances in the oral cavity as in the bladder or the bowels. A diseased pulp is as simply healthy structure disturbed in its normal functions as the surgeon finds in a sprain or an aneurism. There is no more an isolated and distinct dental pathology than there is an independent ocular or aural pathology. The same natural forces move, and the same physiological laws govern the processes of disease in the teeth as in the heart or lungs. How then can we expect the problems of our pathology to be solved except by deputy? The limitations of dental education may make eminently successful practical men; but as we cannot know any fact scientifically by mere intuition, it is difficult to surmise how we can pretend either to accuracy in diagnosis.

Why do we err in diagnosis? Because we do not *know*. Do not know what? Do not know the scientific basis and detail of diagnosis: do not know what we see, smell, hear, taste, touch. Our very senses are apt to be deceived, and nothing is truer than that we cannot accept as infallible what we call the evidence of our senses. We cannot always believe what we see with the naked eye, nor yet with the microscope. Those who are familiar with the exploded inflammatory theory of caries can recall the microscopical errors even of Heitzman and Abbott. I remember the late Dr. McQuillen referring to this fact in looking at a large micro-photograph, one of a diatome, the pleuro-sigma angulatum. When held within focal distance of the eye, the sigma or spaces appeared hexagonal, but if carried beyond that they assumed a circular form, giving a good illustration of the fact that we cannot always believe what we see. The results of varying microscopical adjustment, and the revelations made by the use of increased power, are familiar to us all. Indeed we are met in our investigations by numberless obstacles to the establishment of fact, and are often tempted to hasty generalization and preconceived conclusions. Illustrations of this are older than the amalgam controversy of 1845, when it was stated, even by chemists, that the sulphuret of silver on the surface was a sulphuret of mercury. Jumping to conclusions, based upon imperfect observation of phenomena, has been one of the common mental gymnastics of the profession, and our memories, as well as our laboratories, are lumbered with the "cock-sure" infallibilities of ingenious inventors. Fact does not leap into existence out of mere fancy, as Minerva bounded at once out of the head of Jupiter. The history of errors in the dental creeds, every one of which had their dogmatic defenders, would make an interesting addition to the literature of dentistry. We have had many fads presented to us in our lifetime, and it should make us modest in our assertions to reflect that for every established fact we have the history of a hundred demolished fables. Simon Pure has so often turned out to be a Will-o-the-Wisp in disguise that experience makes one cautious of accepting as gold all that glitters, and yet truth has often risen out of error. As Bacon says, "*Ex errors citius emergit veritas quam ex confusioe.*" We need not therefore be deterred by our errors. If we were we would never discover a single fact, for there was never a single fact that was not born of a score of errors.

Now, to form a correct diagnosis we must at least know the physiological character of the structure we treat. Yet that is not enough. It is like knowing only half the alphabet, or like knowing by heart the impersonal Latin verbs, while ignorant of the first declension. In that way we are only "fractionally qualified" diagnosticians. To know caries from erosion, gingivitis from the oral effects of mercury, to distinguish pulpitis from pericementitis—that is not all of dental pathology.

The applications of etiology are as necessary in simple odontalgia as in complicated fever, if our diagnosis is to be better than a guess. Proper treatment can only follow knowledge of the true cause of disease. A case of odontalgia is presented. Sound teeth by the ton have been extracted because the operators, chiefly the physicians who meddle in dentistry, did not know how to search for the origin of the pain. There are as many causes of odontalgia as there are methods of treatment. What sort of odontalgia is it? Or is it odontalgia, or reflected neuralgia, or any one of a dozen other causes of toothache? It may be neuralgia. If so, is it trigeminal or trifacial? And if so, is it caused by dental irritation, or is of distant, perhaps of abdominal origin? If odontalgia, is it local, and if so is it due to simple exposure of hyper-sensitive dentine, or to an exposed pulp, or to morbid conditions of the pulp without exposure, or to pulp stones, or to a dead pulp and alveolar complications? Is it referred odontalgia, and if so, is it peripheral, central or cerebral, systemic or general? Is it the odontalgia of gout, of rheumatism, of pregnancy; the cause of each differ. The patient complains of pain in a lower bicuspid, it is reflected along the mandible to the ear. It may be that the pain originates in a lower molar. We cannot trust the opinion of the patient. This is, no doubt, very elementary to this audience, but I use the simplest illustrations to point out the frequent need for more than merely local dental knowledge. Why do the physicians who extract teeth so commonly err in their diagnosis? For the same reason that we err. Their knowledge of diagnosis is too commonly merely medical; ours is too commonly merely dental. It is important in all our practice to inquire how a particular disease developed. When, for instance, we find rapid and extensive caries in the teeth of an otherwise healthy patient, our duty is only half done by operating, or even by hygienic instruction. Exceptional effects have

exceptional causes. The permanency of operations may depend as much upon correct knowledge of the cause, as upon skillful work. The causes are not always confined to the mouth, and our oral hygiene may be largely useless to prevent recurrence of disease. Directly we know the truth we can proceed with some scientific accuracy.

I have long been convinced that one of the most valuable specialisms in dentistry would be that of the exclusive consultant who would devote his entire time to diagnosis and critical examination of all the possible influences which may act injuriously upon the dental structures. Our failures in diagnosis are frequently due to lack of time, especially in constituencies where consultations are "included in the bill of fare." There may be temporary or constitutional disturbances, such as anæmia, chronic diseases of the nervous system, of the liver, the kidneys, pregnancy, menstruation, necessary for consideration. We may err by attempting to blame the teeth when, as a cause, they are entirely innocent. We may attribute to carious teeth morbid conditions which have been merely coincident and not consequences. Scrofulous caries of the malar bone, near the suture with the superior maxillæ, may be attributed to diseased teeth, when they are in no way connected with the disease. A sub-maxillary lymph gland, adherent to the bone, in an early stage of suppuration may be mistaken for an outer pointing alveolar abscess. On the other hand, a developing tumor of the maxilla may be mistaken for an abscess; a lymphatic gland in the lower jaw, due entirely to strumous conditions, may be mistaken for an abscess. Only recently I met a case of a discharge from the sub-maxillary gland, extending to the clavicle, and which had been surgically treated off and on for two years, due to the death of a pulp after the rough treatment of crowning a lower dens sapientiæ. Many such cases, no doubt, occur to you all. There are so many moles in our own eyes that I refrain from referring specially to the many errors in diagnosis made by physicians in relation to the jaws. When we contemplate the immensity of our own ignorance, which long experience and careful investigation seems to intensify, we need to be charitable to the mistakes made by medical men in matters encroaching upon our specialty. Various affections of the salivary glands of the jaws, the antrum, the gums, the ear and eye, the throat, the nose. etc., originate in dis-

eased conditions of the teeth, and are only properly treated by their primary or coincident attention. Simple abscesses are every day confounded with serious tumors: mumps with alveolar abscess, and *vice versa*. In dentistry we are infested with a class who escape diagnostic difficulties by the "practical" use of the forceps. They are nothing but quacks and tinkers, and were public opinion as sufficiently enlightened in the value of the teeth as in that of the eyes, they would be treated as criminals.

Nitrous Oxid.

BY A. M. LONG, D.D.S., MONROE, MICH.

NITROUS oxid has been in use for minor surgical operations and extracting teeth for over fifty years.

It has proved to be the safest and best anesthetic known in dental practice. There are on record hundreds and thousands of administrations without a single death. In all its history it has been the cause of but very few deaths.

I am aware there exists a prejudice among some of the members of the dental and medical professions against the use of nitrous oxid as an anesthetic, claiming its unpleasant symptoms during its administration, and its transitory effect. In the most favorable cases it gives but little time to operate. As to its unpleasant symptoms, if a partial failure from a full anesthetic state should not be reached, and unpleasant and undesirable symptoms should occur, in all cases, if we study our subject, this can be obviated. In the administration of any anesthetic the nearer we can comply with nature's laws the surer we are of our success.

Let me illustrate this. Suppose we have a patient who is very nervous and has been suffering from severe pain for several days. She comes into our office with her gums and face inflamed and swollen. It is a cold day and she does not have time to rest and get thoroughly warmed, but wants the tooth extracted at once, and insists upon taking gas. The gas is given and she resists it with all her power, but not being in a condition to sleep the result is not what it should be. Take the same patient and let her get thoroughly warmed in a pleasant room with quiet and

congenial surroundings, and her blood will circulate freely, in a proper manner. Nature will then assist to produce a slight drowsiness, and the gas can be administered with no resistance on her part. But the apparatus should be constructed so that the patient will not have to *struggle* to breathe the gas, instead of breathing it as naturally and freely as the pure air. The inhaling and exhaling valves to the inhaler must be large, and the gas must be forced to the patient without the effort of the patient drawing it through a tube four feet long.

Persons suffering from any disease of the brain, though it may be of a mild form, are generally not desirable patients, especially if your waiting room is full of patients anxious to see you. During the administration they behave well, not a murmur or a struggle, but as soon as the operator applies his forceps, they begin to scream. These violent demonstrations may be made without the least sense of pain or knowledge of any part of the operation.

Hysterical patients may give up to similar emotions. Again, this may happen to a patient in good health, but the patient is not to blame.

Suppose the valves in the inhaler should become lodged, so an equal volume of gas and air would be administered, or in case of a leaky connecting tube from the inhaler to the apparatus. In this case the patient would scream and have unpleasant dreams and you would have to acknowledge a failure.

Gas may be given to this patient from an airtight and well regulated gas apparatus. In this case the person will enter dream-land as pleasantly as if nothing were happening, and in nearly all cases awaken with the greatest surprise and pleasure to know that the teeth are out.

Fleshy people, as a rule, will not take gas as well as the medium classes. They seldom scream, but give way to jerking and twitching of the muscles, and the blue color of the lips and face will show plainer than in any other class of patients.

Liquor should not be taken in any quantity before the administration of gas. It makes no difference if the patient is under its influence or not, it will only serve to increase his already excited condition, and he may do violence to himself or the operator.

I know of operators who prescribe to some of their patients

from one to two tablespoonfuls of liquor in water just before giving the gas, claiming better results from the stimulant; but, by my own experience, I prefer giving the stimulants, if I think they need it, after the operation. Sometimes I give liquor, but in most cases I prefer from fifteen to twenty drops of aromatic ammonia in an ounce of water. I have mentioned a few of the undesirable patients that we meet, and have said nothing of the thousands that go to the dental office and take gas without the least trouble, and perhaps ten minutes after the operation they are seen attending to their usual duties as though nothing had happened. The emotions that I here mention that some patients give way to, while under the influence of gas, may have a tendency to excite a novice.

Those of us who have been in the practice for some years, do we not remember how excited we were the first time we attempted extracting? We were first anxious that the teeth would come out all right—then, how about the patient! Well, we could hardly wait until they, too, came out all right. Time and experience will remove much of our anxiety. What we once considered real dangers, we now know are the results of not understanding our patient's temperament and condition. Experience has taught us that before any successful end is accomplished, our apparatus must be in good condition, and not only that, but we must know how to deal with the many different classes of people. I may safely say that there are some well defined actions that we may expect from each person, according to temperament.

The person with a highly nervous and excitable temperament will require as much gas, and the quantity will vary just the same as a person with any other temperament, taking on an average from four to eight gallons, but they will breathe faster, and get under its influence quicker and recover sooner. This class of patients are active in all their movements and they will make the operator "hustle."

Then we have the less ambitious, the "lethargy class." They come to our office as though they could not put one foot before the other. We seat them. Their dullness and inactivity makes us want to assist them in breathing, while it seems an age before the gas takes effect, and it takes them about as long to get over its influence. With patients of this sort, usually if stimulants

are not applied under their nose, not touching the membrane, and then urging them to breathe, they seemingly would not have power enough to arouse themselves.

We also have to deal with the lymphatic temperament. Such people will nearly go frantic in praise and enthusiasm for the operation, and the gas, as the case may be. If they should have had a dream in which they get mixed up in a railroad accident, instead of praise they will turn to scorn, and it would be very unpleasant for the operator.

The second objection to nitrous oxid gas is its transitory effect. All I have to say is, it will last long enough to extract from one to ten teeth, and there is no harm in giving gas a number of times, provided the gas is pure, and it is given but once at a sitting.

In my own experience, covering over fifteen years, in administering gas, I have not found it necessary to resort to any other agent as an anesthetic, and I have never found a patient that could not be brought under its influence.

Dental Ethics.*

BY DR. E. E. M'GOVERN, VERGENNES, VERMONT.

SEVERAL years ago, when I was appointed one of a committee to revise our By-laws and Code of Ethics, I had no idea that I should again be called upon to discuss the subject, and certainly would not do so now were it not for an urgent request from the chairman of your Executive Committee, to whose instruction I owe my earliest ideas of dental ethics.

Were I to enter into a discussion of the particulars of our every day practice, I should weary you in repeating what you already know, therefore I shall confine myself to a general view of the subject. In arranging a code, your committee was filled with the enthusiasm of a new undertaking, and endeavored to fix a standard sufficiently high to dignify a profession still young in years, and with sufficient latitude to please the most liberal. Whatever our measure of success, your convention accepted our work, and the code, as then adopted, has been our standard since.

* Read before Vermont State Dental Society, March, 1898.

While I would not take the position of a carping critic it seems to me pertinent, in this twenty-first year of our organization, to ask—have we maintained that standard? Have we exceeded that latitude? A brief review may be in order here. That code seems to me to consider our duty to ourselves, our duty to each other, our duty to our patients. Our duty to ourselves demands that we make the most of our environment. The varying circumstances surrounding each one must make individual and personal, rather than general rules, necessary. We must all agree that a most important factor in our success, and the first duty we owe ourselves is the securing of a good education. Unfortunately, until within a few years, this has not been considered strictly necessary to the making of a good dentist. Even some of our best colleges matriculated after very superficial examinations. It is gratifying to know that this matter has been greatly improved, and to day our best colleges require a fair preliminary examination before matriculation. In some States an examination before a State Board of Regents is required, which is a step in the right direction. We desire to be classed as professional men, we must therefore fit ourselves to meet the requirements demanded of professional men in other lines. The title "doctor" as applied to a doctor of medicine, is practically a distinctive mark of scholarly attainment. While it certainly is not my design to lower the position we occupy by courtesy, if not always by education, yet I cannot help asking—how many of us are fully entitled to that much coveted and jealously guarded title, Doctor? It may be remarked, and with some justice, too, that we have in our profession men who are excellent dentists and yet are far from scholarly. This may be true, but, gentlemen, to bring our profession up to the high standard for which we all hope, our ranks must be recruited by young men of educational as well as dental attainment.

I do not need to remind you, gentlemen, that there is no profession so trying to the nerves, as that of dentistry, requiring, as it does, so much that must be classed as surgical work. Sixty years ago, before the use of anesthetics, surgeons sometimes refused to perform operations that were considered best for the patient, simply because they could not bring themselves to endure the sight of the suffering they must cause. The dentist's work, much of it, causes so much suffering that he must have good

nerve to be able to forget it sufficiently to do thorough work, therefore an important duty is the care of our health. A discussion of the way in which that duty can be fulfilled would exceed the limits of a paper like this—suffice it to quote from Sec. 3. "The dentist should be temperate in all things, keeping both mind and body in the best possible health, that his patients may have the benefit of that clearness of judgment and skill which is their right." The dentist, if any one, should deserve and claim the title of gentleman; there is scarcely any subject in regard to which the general public shows such deplorable ignorance as in that of dentistry, yet each one must be met with politeness and patience, attention and consideration, all characteristics of a gentleman, if success is desired. So true is this that I unhesitatingly affirm, when I hear of a thoroughly successful dentist, he is a true gentleman. Our duty to each other seems an appropriate theme to consider here, since in that case any lapse from gentlemanly conduct cannot be excused on the ground of dealing with ignorance. It is the most natural thing in life for man to be more or less selfish—this, I am sorry to admit, is as prominently developed in the dentist as in men in other walks of life; but, while we are naturally selfish, there is no reason why we cannot teach ourselves to be charitable and just. We are all striving to reach the same goal, but let us insist on fair play, as much as when we were boys. The poet who wrote—

"Man wants but little here below,
Nor wants that little long,"

lived before the time of the modern dentist. He wants a great deal, and that as well as professional fame is what he is striving for. Doctors of medicine agree upon a schedule of rates, reasonable for the place in which they live, and he who deviates therefrom without good and sufficient reason, forfeits the esteem of his professional brothers. Will not the same rule hold good in our profession as well? Are we, when consulted by the patient of a brother dentist, sufficiently careful not to criticise his treatment? Do we put ourselves in his place and speak of him as we would have him speak of us? If we could sometimes forget our individual selfish aims in that larger *esprit de corps*, we could do much to elevate the standing of our profession. As we come to consider our duty to our patients we think, surely this should have been considered first, for the others are of necessity

secondary to that—the means toward the end. The duty we owe our patients is self-evident to every practitioner. In the first place, our offices should be made comfortable and attractive to a degree commensurate with our circumstances and convenience, with as little display of instruments and appliances as possible. Our reception room should be comfortable and home-like, free from disagreeable odors or other disturbing elements, and should be, as far as practicable, separate from the operating room. The operating room, which is the “Star Chamber” of dentistry, should be supplied with all conveniences in the way of instruments and appliances necessary to the performance of the different operations which we are called upon to perform. In this connection I deem it of the utmost importance that we keep our instruments not only thoroughly disinfected, but they should be well assorted, sharp and keen. Much of the dire dread and accompanying pain can be alleviated by using well adapted sharp instruments. It has been remarked, and with some truth, that the best cataphoresis is a steady hand and a sharp instrument. We owe our patients immaculate cleanliness. In person or surroundings nothing should appear to offend the most sensitive, even in the finger tips no suggestion of bacteriological deposit should exist.

I quote from a recent journal as expressing clearly my own views: “Meet your patient as a friend, cordially, familiarly, cheerily; easy simplicity, social suavity and professional courtesy must be instinctive, spontaneous, hearty. Our success in receiving our patients is half the battle. We must have the dignity of a man of business, the reserve of a professional and the polish of a gentleman, yet be as kind, gentle and tender-hearted as a child.” I am convinced that one who could meet these requirements has most of the characteristics of the ideal dentist, yet we have in our ranks many whose earnest efforts to reach that ideal have met with a large measure of success. What boundless patience with ignorance, what gentleness with suffering, what courtesy to meet rudeness, what firmness and decision with the timid, what forgetfulness of self are required, only we who go the weary round each day can know. We are confronted daily with the grossest ignorance of anything pertaining to dentistry or even to decent cleanliness. It is scarcely reasonable to expect in our patients any great knowledge of the principles of dentistry, and

we are and should be always ready and glad to explain to willing listeners, but those who come with preconceived ideas of what should be done, and, right or wrong, accept no denial, tax our patience to the utmost. It is hard for such people to believe that pride in honest work is a stronger power than the mighty dollar. While I would be the last to say anything disparaging of woman, whose desire to make herself attractive looking, has added materially to our bank account, I still look regretfully back upon the times when I have put the smallest, whitest, prettiest teeth where nature had originally put far different dentures, just because, "When a woman will, she will, you may depend on't; and when she won't, she won't, and there's an end on't."

Gentlemen, let us make it an important point in our ethical code that, before the duty of pleasing our patients comes the duty of doing good, honest work. Is my ethical code old fogyish, somewhat behind the times, out of date? Show me a better standard and I will adopt it. For I agree with Bro. Remus, when he says: "Dar aint no wuss victim of misplaced confidence dan the man who gets to thinking he knows everything." Perhaps Prof. Thompson put it better when he used to tell his students—"No one of us is quite infallible, not even the youngest." Every year brings new ideas and new inventions that are indeed a help to our profession, but let us be sure they are right before we accept them. I will gladly mount the wheel of progress with any one of you, but we have all seen many a scorcher come to grief, and while our wheel goes swiftly and well over the smooth road, there will be many rough spots and many a hard climb, where we will be glad to mount again the good old steed that served our fathers so well.

The Country Dentist.*

BY DR. J. A. PEARSON, BARTON, VT.

ONE of the questions which confronts the country dentist is how to make his practice pay him; if he has entered the profession with the one idea that he can get a living easier than in some other way and looks at the business wholly from a commercial

* Read before Vermont State Dental Society, March, 1898.

standpoint, he is likely to be one it is not pleasant to practice beside.

The sphere of the country dentist to a great extent is that of a pioneer or missionary. When work is being done for less than good conscientious honest work can reasonably be done for, the quality of the work is quite likely to deteriorate with the price. I can see no reason why the country dentist should not and can not receive a proper remuneration for his services, provided he is up with the times and the community in which he is located appreciates and understands the advantages derived from dentistry. It must be borne in mind, however, that many of us are practicing in localities so situated we seldom receive a call from another dentist or come in contact with others in the profession, thus losing the stimulus generated by social intercourse and interchange of thought with one another, therefore we must make a greater effort to keep in touch with the times or we will fall short of what we might be. It is discouraging to plod along year after year in a community which, as a whole, are ignorant of the advantages derived from our profession, only so far as to relieve them of an aching tooth by extracting it when it should be saved. The only question being asked, when told they should be saved by filling, is what it will cost, and if we will warrant the fillings to last as long as they live, if not they might as well have the teeth out now as ever. When they bring a child to have the six year old molars extracted, we tell them they are permanent teeth and should be saved, they emphatically inform us we are mistaken, they are certainly temporary teeth because they had theirs out and have others in their place. They go from our office fully convinced we do not understand our business, or we are trying to get their hard earned money by filling temporary teeth, not realizing if they were temporary teeth we were conferring on the child one of the greatest of blessings, so they go from our office feeling glad they have not let us fool them, and we are left to ponder and wonder.

I do not wish to carry the idea that all of our patients are like the above for we have some very intelligent patients, who fully appreciate our efforts to serve them, and who does not appreciate a good patient; but far too many of our patients are so ignorant of the first principles and benefits derived from dentistry, we are sometimes discouraged in our efforts to do our best

for them. Perhaps some of you who have a good practice among people that understand the advantages derived from the proper care of the teeth, will say, "Let them go." We cannot afford to, for we need their business and they would want our work as well as do your patients yours, did they understand the benefits derived from it. There should be an effort made to educate the masses in this line and show them the importance of the teeth to perfect health. Were the people as a whole as well informed on this subject as they are on the general questions of the day, there is not one-half dentists enough in Vermont to supply the demands for work at good prices. I think our local papers should be induced to publish short articles on the importance of the teeth and their care. It is very slow business for the dentist to educate the people, coming in contact with comparatively few of a community, and talking with them a few minutes when they are half credulous, wondering if we are really telling the truth, or after the work. There is no reason, with the dental journals published, why the country dentist, with his usual leisure hours, should not be well informed on what is going on in the profession. There are many good reasons why every dentist in Vermont, should become members and contributors to the Vermont State Dental Society; their annual dues are needed to carry on the work of the society, so the Executive Committee may get the best talent possible as demonstrators and essayists at our annual meetings. It is the only Vermont State Dental Society, and is recognized as an important factor by our legislature. For our own benefit we should be identified with a society which is recognized by the leading dental societies of the United States. By attending its meetings we come in contact and become personally acquainted with some of the best men in the profession, men whom we should consider it an honor to know. Often we become intimately acquainted with our neighboring competitors whom we have never met, and only know them through some of their disaffected patients, who portray them to be wretches unworthy of consideration; but when we see them face to face we learn they are men, whole-souled, honest and glad to aid us in any way they can. Had it not been for the Vermont State Dental Society, we should not have had a Vermont Dental Law for at least several years after it was passed, if at all. Had we not had a State law, the country places would have been overrun with tramp

dentists, cutting down prices so it would have made it impossible for any one to have done honest work and received a living price for it.

All honor to the founders of the society. Well did they lay the foundation. May its shadow never grow less. Some of them are with us to-day. Long may they live. Well do I remember the kind remarks and advice of some of them, although I never became personally acquainted with many. I remember with gratitude and pleasure helpful things said to me by some, especially Dr. Lewis and the much lamented Dr. O. P. Forbush. It has been my experience with the members of this society, that they have been always as willing to give advice and counsel as we were to receive it. I think they should know their kindness is appreciated. I believe the country dentists are trying to do honest work, and a great deal of their work will compare favorably with any work done. I believe amalgam and gutta-percha are a boon to the country dentist, enabling him to do good serviceable work at the prices he is obliged to charge. There is no reason why the country dentist should not or cannot be just as thorough as if he was practicing in a city, and sometimes more so, for often he can take all the time he wishes, and maybe he had better, for if done too quickly the patients may think he is overcharging them. We should not be afraid to acknowledge it, when we cannot do a class of work and do it right. We should be frank and honest with our patients, and if they wish for a class of work we do not or cannot do, tell them so, and assist them to get what they want by sending them to some reliable dentist, who does that class of work; in doing this we simply act the part of honest men, and do not degrade ourselves in the class of work we do. There should be such an interchange of courtesies and acquaintances that we can send patients to reliable honest men for such work.

The Use of Coagulants in the Treatment of Pulpless Teeth.*

BY DR. F. D. MURTO, PITTSBURGH, PA.

COAGULANTS have been the time tried friends of old practitioners for years, and they were contented and satisfied with the results attending their use. It was not, however, until recently we have been informed that all this is a mistake, and we are told that whatever success we have met with in the use of such remedies was in spite of such unreasonable treatment, and not on account of it.

Dr. A. W. Harlan, I believe, is credited with being the originator of this theory, and his followers are legion.

The position taken by the supporters of this theory, as far as I can understand, is in the belief, or rather in the assumption, that these coagulants, when introduced into pulp canals, produce by their action an albuminous coagulum; this coagulum, sealing up the orifices of the tubuli, prevents further penetration or diffusion of antiseptics throughout the dentine, thereby enclosing in these tubules a quantity of unsterilized organic matter, which, by its further decomposition, may sooner or later give rise to pericemental irritation. This, in substance, is the ground taken by those who condemn the use of coagulants in the treatment of this pathological condition.

Just in how far this claim is at variance with the facts borne out by experimentation I will endeavor to show, but before doing so, let me again disclaim all originality for the arguments of which I may hereafter make use, as I propose to quote extensively from papers upon this subject by Doctor Kirk and others.

The question that we must determine resolves itself into this: Is this coagulum as formed by the use of such medicaments as carbolic acid, chlorid of zinc and sublimate, self-limiting, and does it preclude the possibility of sterilization by reason of such coagulum? This seems best answered in Dr. Kirk's paper, published some time during 1894 in the *Dental Cosmos*; bearing directly upon this point, he has this to say: "If the assumption be correct that coagulants seal up the orifices of the dental tubuli with an impenetrable coagulum, and are therefore self-limiting in their

* Read before the Odontological Society of Western Penn., December, 1897.

action, it would seem that we are confronted in this case with a definite exception to the well established laws of diffusion known as osmosis.

I hope to show that such is not the case, and that the assumption as noted, is based either upon faulty reasoning, or insufficient data. I shall also endeavor to demonstrate that coagula are not necessarily barriers to diffusible antiseptics; that the uncompromising physical forces of osmosis or capillarity are operative in the case of coagula, and that diffusion of liquids will take place through, nay, even by the means of such septa."

Now, in order to place this phenomena of osmosis a little clearer before our minds, let us review briefly some of the principles involved. For this again let us refer to Dr. Kirk:

"The observed natural tendency of all fluids, whether liquid or gaseous, to diffuse, interpenetrate or mix with one another is called diffusion. It is a natural tendency, dependent upon molecular attraction, and takes place without mechanical action, and in apparent disregard of the force of gravitation. It is a well established force called capillary attraction or adhesion, where the surfaces of different kinds of molecules of matter cling or adhere together. When such diffusion of liquids, however, takes place by means of or through a membrane, it is called *osmosis*. Both diffusion and osmosis take place in accordance with well defined physical laws, whose formulation is the outcome of numerous experiments and observations by men of different eras and climes. The general results of their work led to but one resulting generalization, namely that capillary attraction, so-called, is the fundamental principle underlying all phenomena of diffusion or osmosis. Whether it be the absorption of nutrient pabulum in our bodies, the suction of sap from the earth by flower or plant, or as I hope to show, the penetration of coagulant antiseptics in the treatment of pulpless teeth, the same force of adhesion or capillary attraction is the basis of this phenomena. There is no essential difference between penetration or diffusion *in* or *out* of the body, between the so called vital or the physical. This point seems to be definitely settled.

The main conditions favorable to osmosis, briefly stated, are: First, that the substance to osmose be crystallizable and readily soluble. If they are amorphous or insoluble, they will not penetrate the membrane. Second, since substances have to pass

through the member in order to meet each other, the membrane itself must be capable of imbibition; of being wetted by both solutions; in other words, of taking them up into its substance. Third, both liquids must be miscible with each other. If they are not, diffusion cannot take place. Fourth, they must be of different densities or dissimilar in kind. This much for the general diffusibility of liquids.

The rate of diffusion depends upon additional factors, since it is well known that membranes do not imbibe all solutions with the same degree of activity. Liebig has shown that distilled water is always taken up in greatest quantity and that crystallizable solutions enter membranes in an inverse ratio to their density. The greater the density, providing it does not exceed a certain percentage, the stronger will be the current toward itself. Weaker solutions diffuse more rapidly toward strong than *vice versa*. Albumen is the most powerful producer of endosmosis; hence it is that it plays such an important part in absorption in the human system. Heat, slight elevation in temperature, is another factor in rapid osmosis; as are the variations in density, pressure, affinity, and nature of liquids to be diffused. For gases, the law is more uniform. Now we come to the coagulants, crystalloid agents that coagulate albumen. How do they act? A French investigator, with an unpronounceable name, has shown that these substances, although slowly, are nevertheless taken up by and diffused through membranes. He has likewise shown that they are also taken up by blood vessels. We have in the three substances, namely, chlorid of zinc, carbolic acid and sublimate, typical coagulant antiseptics, whose properties are quite familiar to all of you. If a test tube containing a strong solution of zinc chlorid, say to one-fourth or one-third of its depth, have carefully added to it, so as not to agitate the surface of the zinc solution, an equal bulk of fresh egg albumen, we will observe at the contact point of the two liquids the formation of a dense, white opaque film, which is the coagulum formed by the union of the two substances. Observe at this point, we have at once fulfilled all the conditions needed for osmosis, and we are justified, therefore, in expecting osmosis to take place; and from what we already know of the property of albumen to induce endosmosis, that is, osmosis toward and into itself, we should naturally expect the coagulation to proceed throughout the entire

extent of the albumen column. This it does in a comparatively short time; and if we have been careful to previously mark the original level of the zinc solution, which will indicate the surface of the first contact of the two fluids, we will find at the close of this experiment when the albumen has completely solidified, that the level is exactly as it was originally, showing that the result has been brought about by osmotic action, regardless of gravitation, and not produced by a mere mechanical mixing of liquids.

It shows incontestably, what is more to our purpose, that the assertion that coagulants defeat the object sought to be obtained by coagulating the organic surface with which it comes in contact, and prevent their own diffusion, is an error simply because it is not in accordance with facts. The experiment just noted has been carried out with sublimate and carbolic acid respectively, with exactly similar results so far as the osmotic feature is concerned, the only difference being in the relative rates of penetration or diffusion of the coagulants in the albumen.

Miller, in the *Dental Cosmos*, of 1890, states that bichlorid of mercury, in powder, applied to the end of a pulp one and one-half inches long (taken from the first molar of a calf) permeates the whole pulp within forty eight hours, converting it into a stiff gray mass.

Now I would like to presume upon your patience just for a few moments longer, and give you as briefly as possible, another of Dr. Kirk's experiments that impressed me as being just as convincing as it was unique. To show the possibility of osmosis in the dental structure he took, recently extracted, sound teeth which had been preserved in a dilute solution of boroglycerid. Opened them from the masticating surfaces, or in case of incisors from the lingual surface with a drill, and communication thus established with the pulp chamber, care being taken to disturb the pulp as slightly as possible. The aperture of entrance was enlarged and made conical, with the base of the cone away from the pulp chamber. Into this was fitted, with cement, a glass tube with its end drawn to a funnel or cone shape, so that it fitted into the cone shaped aperture of the tooth as accurately as possible. The apical foramina of all the roots of the teeth so prepared were closed by dipping the root ends into melted Canada balsam. By this arrangement a funnel like tube in direct water tight communication with the pulp chamber was secured. Into a number

of teeth thus fitted with tubes a saturated solution of zinc chlorid was poured. They were then immersed up to their anatomical necks in egg albumen, contained in the test tube. The funnel tube attached to the tooth was passed tightly through a cork, and this arrangement maintained the tooth at a determined depth in the albumen. It is now evident that if the coagulating antiseptic, zinc chlorid, is self-limiting in its action, and sets up an impenetrable barrier to its own diffusion, none of it can possibly pass the root walls by osmotic action. On the contrary, if this be in error, then in the course of time, the zinc salt will find its way through the structure of the roots, and manifest its exit by coagulating the albumen around the root. In these experiments, after twenty-four hours, there was evidence of the forming of coagulum upon the outer surface of the root, and in two days later the coagulum had spread so as to come in contact with the walls of the containing test tube and completely envelope the root throughout its entire length.

It seems to me that the only logical deduction we can possibly make from this and the foregoing experiments is, that the position taken by the opponents of coagulants upon the ground that they are self limiting barriers is positively false, and without the support of practical demonstration. If these coagulating agents then are to be discarded, it must be for other and better reasons.

Erosion.*

BY FRANK ACKER, D.D.S., CLEVELAND, O.

THE term "erosion," as used in dental pathology, is the name given to a peculiar destructive process of tooth substance. The phenomena in respect to location, shape, color, hardness and smoothness of the part affected, differ sufficiently from ordinary forms of decay, to permit the use of a distinctive appellation. Erosion cavities are most frequently found on the labial and buccal surfaces of teeth, especially the right anterior teeth, though there are instances of their occurrence in proximal positions or even extending across the incisive edge and on the lingual surface toward the gums.

* Read before the Cleveland Dental Society, February, 1898.

According to Black, the incisors are most frequently the seat of this affection, and next in frequency the cuspids. Bödecker would give the cuspids the first place. One tooth is rarely affected alone, but similar lesions appear within a few months on adjacent teeth. Yet there is no law of steady progress and symmetrical extension on both sides of the tooth first attacked. Often the destruction is greatest at this point, diminishing gradually with the distance from that point—seeming to indicate dependence on time, but there are many exceptions to this rule also. The cavities vary in extent from a simple groove, generally running mesio-distally to an expansive area almost covering the face of the crown. Grooves running lengthwise on the labial and those running from labial to lingual on approximal surfaces are rare. Generally a portion of the enamel, about half line in breadth, next to the free margin of the gum, retains its integrity. Bödecker believes the gum is always somewhat inflamed and retracted.

The shape of the cavities also varies greatly. A common form consists in an abrupt descent of the cavity wall nearest the incisor edge, with the floor of the cavity gradually slanting toward the surface, making the angle at the gum margin much more acute. This condition has been observed reversed. Or from all sides the slope may be the same, making a saucerlike depression. The position of the tooth in the arch, as to prominence, or if twisted on its axis, has been noted to affect the shape and extent of the cavity. Black had a case of shortening of the incisors that could not be explained by abrasion, as the occlusion was such that these teeth could not meet.

Discoloration is slight if it exists at all, except when complicated with decay. The pulp is rarely exposed. A formation of secondary dentine takes the place of this pulp and its outline is distinctly visible in deep erosions. The eroded surface is hard, smooth and shining. In ordinary decay the broken down remains of the mineral and the soft animal matter, furnishes clues for investigation. The presence of bacteria in the dentinal tubules can be demonstrated microscopically and by chemical analysis the presence of acids. But erosion, when found uncomplicated with decay, presents a much more difficult problem of etiology. This imp of Satan takes special pleasure in climbing mountains of difficulty—the perpendicular icy walls of enamel being unable to trip him—bearing a banner with a strange device, “erosion,”

he marches on, leaving no traces of his implements behind him, only the accomplishment of his awful purpose.

That the cause is merely mechanical, as of a tooth brush, is improbable, because the discontinuance of a tooth brush was noted to have hastened, if anything, progress in at least one case. That it is simply chemical action is equally untenable, or the process would not be localized as it is.

In an experiment on two bicuspid, out of the mouth, an artificially produced constant current of an acid fluid was directed at an angle toward the interproximal space and resulted in cavities similar to approximal erosion. But does not prove that this is the method in which erosion accomplishes its work in the mouth, because such constant currents have not been demonstrated.

In some cases the mucous membrane of the lip has presented elevations fitting into the cavities, and giving some grounds for the absorption theory, but such approximity of tissue capable of absorption is not always demonstrable. That electrolysis may have some part is admitted, but that it wholly explains is denied by such men as Black and Swain, of Chicago, who have experimented in this direction.

How ordinary cavities of decay occur in similar positions, as on smooth surfaces habitually unclean from any cause, for instance, mouth breathing, also at or near the junction of enamel and dentine, due to acid mucous or absorptive processes. Class III. and IV. Black. By a simple experiment—painting the labial surfaces with a mixture of lamp-black and alcohol and then, when dry, permitting the normal action of the lips, I find the prominent points most quickly cleaned and the pits and grooves retain the lamp-black longest. The prominence of the gum also protects a little strip near the margin on the neck of the tooth. Then bring the tongue into play and it will be found that the longitudinal grooves are much more readily cleared than the mesio distal. In the lower teeth I also observe that the lamp-black finds its way to the lingual through the approximal spaces and is soon apparent to the taste. This would indicate a current in that direction. I was unable to get a similar effect on the upper teeth. So then along the necks and in the mesio-distal grooves, acid secretions would find the most propitious field for action. The comparatively easy access of tongue and lips to these parts might mechani-

cally rub away the broken down tissues at frequent intervals, leaving a smooth surface. Currents may be the mechanical cause in approximal spaces of the lower teeth. Since the question of etiology is still far from settled the treatment must be comprehensive and wide in range on this account. There are cases on record where the arrest of the process has come without operative interference—others where the ravages would most certainly have led to the destruction of the tooth if left alone. The past treatment appears so me to be as follows: When seen in the initial stages, prescribe the painting of teeth and gums with antacids, as magnesia, prepared chalk, or talcum, before retiring, leave on over night. During the day frequent washes of antacid solutions, alternating with a simple pleasant antiseptic wash, such as 15% boracic acid. Look after the general health or have the physician examine for cause of abnormal secretions. Watch closely, asking patient to call twice a month.

If the case has progressed further so that the dentine is exposed and sensitive, touch with a solution of silver nitrate freshly made by dissolving a crystal in a drop of water. This overcomes sensitiveness, but may leave a dark stain. After a few minutes, if the stain is objected to, a slight undercut sufficient to hold a cement filling in place, can be made with little pain. When at a later date the permanent operation is undertaken the kindly effect of the cement will be apparent in reduced sensibility.

But I see no good reason for putting off indefinitely the proper filling of such cavities with gold, for I do not find that any one has proven the recurrence or continuance of destructive processes in this condition more frequent than in ordinary cervical decay.

Of eight cases which I had diagnosed as erosion, after more careful consideration I ruled out one as coming under the third head of Black's division of decay, and four under Class II. Three cases I am willing to give the benefit of the doubt and call erosion.

No. 1. Man 55 years of age Inferior left cuspid and superior first bicuspid smooth shallow labial cavities, with no discoloration or overhanging margins, but extremely sensitive. Have touched with Ag. NO_3 three times since July, 1895—process is arrested and no more pain; prescribed mouth wash, but did not use.

No. 2. Young man, 19 years old. Smooth deep cavities in

inferior left cuspid and first bicuspid and right first bicuspid; filled with gold before February 17, 1897; are in good condition now. He uses tooth brush, without regularity.

No. 3. Lady between 35 and 40, had typhoid fever three years ago, after which she noticed sensitive points on the molar buccal surfaces near the gum, but it passed away. Within one month it has begun to annoy her again, which brought her to me. Inferior left second and right first and second molars present shallow sensitive grooves, but slightly discolored; no soft decay, hard and smooth; touched these with Ag. NO₃. At the next visit said greatly relieved, but found on examining the anterior teeth, especially cuspids and bicuspid, a fine white line near gum which is sensitive to instruments. Have prescribed magnesia, local treatment, and will watch the case.

Regardless of the fact that I have been able to tell you nothing new, if this paper will provoke a little closer observance of cases classified under this head, your patience and kindness in listening will meet their just reward.

Formation of Dies and the Swaging of Plates.*

BY H. S. GILSON, D.D.S., PITTSBURGH, PA.

PRELIMINARY to the casting of dies the preparation of our model should receive some attention.

A well constructed denture, without doubt, when properly adjusted, adds to the comfort and health of the patient. If from inferior workmanship or other causes, it is not properly constructed, it forms a source of annoyance, discomfort and entirely fails to meet the demand for which it was constructed. As no two cases are alike we can readily see the necessity of carefully studying each case itself and not have a set rule to work by.

The comparison of the model with the mouth is extremely important. The judicious relieving of the hard parts and trimming of the soft, gives our plate, after swaging, the perfection of adaptation necessary in swaged dentures.

Especially is the carving of the model recommended, when the plate to be worn is intended for continuous gum denture.

* Abstract of paper read before the Odontological Society of Western Penn., Dec. 1897.

On the labial and buccal portions of the ridge, severe treatment in the way of carving should be given the model, so that the plate, when swaged, will press into these parts harder than is usual for other metal dentures, as the tendency of the porcelain, when baked, is to draw the plate away from these parts; so that after the plate is finished we have just the right amount of pressure and our plate, when finally adjusted, adheres firmly to the mouth; otherwise we have a loose fitting denture, which in all probability will have to be remodeled.

THE SHAPE OF THE VACUUM

should conform to the general shape of the palatal arch—broad in arches of same nature and narrow and long in contracted arches. Avoid the use of all fancy patterns, cutting each disc special for every case. Have corner rounded, thereby avoiding any possible source of irritation. I do not concur with many in the placing of deep vacuums. I believe the placing of such to be wrong, as they very often irritate the mouth.

Relieving the hard parts will be found sufficient, and answer all purpose of the vacuum. If we have a good impression it goes a long way toward perfection in our plate, and from this a plate can be constructed, which will firmly stay in the mouth without resorting to the deep vacuum to hold the plate in position.

If patient has worn a plate previous to the making of our metal plate, we usually find the membrane grown into the former vacuum. We should carefully allow relief to cover this growth entirely and extend a little beyond it, or else proper adhesion cannot be had. After these considerations we now coat our model with a thin even coat of sandarach, in preference to shellac, it giving us, to my mind, a cleaner looking model, also a good glazed surface, much more so than the shellac.

The sand, metal, manner of smelting, and pouring of same, form quite an array of particulars. Each though very small in itself, but taken collectively are very large.

MOULDING SAND AND ITS MANIPULATION.

I have given the moulder's black loam, used by most brass founders, the preference over all the other materials, as it possesses the necessary properties of giving sharp, well defined dies; has the porosity for the escape of the steam, when pouring, and

is comparatively clean. It is admitted that the other materials give to a certain extent the same results, with probably the exception of marble dust. I have tried most of them, however, and give the black loam the preference.

An oil or glycerin mixed sand has the advantage of always being ready for use, but the dirt and odor connected with it can be just as well avoided.

By having a tight zinc lined box prepared, our loam can always be kept moist, the moisture necessary being determined by experience alone, and by thus having sand always ready, it greatly overcomes the tendency of our metal to bubble when pouring; we can pour the metal at an exceeding high temperature, while if sand has to be prepared at moment of casting, the temperature of our metal will have to be much lower, barely beyond the smelting point and bubbling is very frequent.

The sand should be well sifted before using, thereby mixing it thoroughly and enabling us to remove all particles of metal from previous casting.

THE MODEL.

I prefer the tapping of the model to remove it, much more than removing by force. Let it come out of its own accord, as my dies are more perfect this way.

Of course a model falling too freely from the sand should be rejected. If this is carefully done good results will follow. A very important point to be observed in each step of the work, is to avoid haste. Haste does not give good results, an imperfect die will give trouble and bad results from the start to the finish.

The simple fact of plate fitting the model does not insure the fit in the mouth. A plate should always be tried in the mouth at each step, observing any change necessary, also change that may have occurred in the handling.

THE EFFECT OF OVERHEATING DIE METAL.

Zinc should be smelted over a slow fire, carefully avoiding overheating, as this has a tendency to make our dies brittle, an undesirable quality in a die.

AN EXACT PATTERN.

It seems a very small matter to get a pattern from which to cut the plate metal, but a little experience will prove otherwise.

Economy in working the precious metals is extremely necessary, and the habit can be acquired easily. Having pattern exact saves not only material but time and produces better results.

ANNEAL FREQUENTLY.

Gold must be frequently annealed, heating to a cherry red and then plunging into water or dilute sulphuric acid. This renders metal soft and pliable and easy manipulated. 26 gauge is recommended for upper dentures, although the manner of attaching teeth and shape of the plate determine to a great extent the gauge we will use. In full rubber attachment a thinner gauge can be used than in full solder. Also in partial cases a heavier gauge is necessary, with the exception of lower partials, where we usually stiffen the plate, or swage two thin plates and unite with solder. In these cases 27 or 28 can be used.

In a rim plate, 25 gauge is not too heavy.

A great deal of the gold now for sale is harsh and hard to adapt. It has a tendency to spring in swaging.

A soft gold of 19 karats fineness answers all the requirements. I prefer when I can to smelt and alloy my own plate, thereby getting exactly what I want.

A plate once sprung is very hard to bring back to its former shape. Always be sure to keep the metal free from particles of zinc and lead, which are liable to adhere to it from the dies, as when annealing, with these particles adhering to the plate, the fusing point will be lowered and a hole in the plate, at the place where the base metal adheres, will be the result.

I generally cover my dies with oil and also the counters, and carefully wipe the plate before placing in the flame.

STAMP ALUMINUM PLATES.

I believe it is better not to swage aluminum plates, but stamp them, and not use the mallet more than is necessary, but use a series of dies and counters, tapping together in the usual manner with a heavy hammer, and not with the hydraulic press, of which I shall speak further on.

The entire process should be gradual and gentle; forcing it suddenly is apt to fracture it, especially if annealed at too high a temperature. This will take longer to arrive at the result, but it justifies us to take the time. Aluminum should never have the

force of the mallet direct upon it, a heavy piece of linen, or even rubber dam, should be laid on the metal and swaging conducted on this. The metal is extremely soft and easily indented, and presents a sorry appearance if we do not use this precaution.

USE OF THE PARKER SWAGER.

In lower partials I experience the most trouble; not in the swaging, but when I attempt to re-enforce the plate. Since the advent of the Parker shot apparatus, I find my trouble considerably less, since by the machine I can reduce plate to former state easily on the plaster model. This device I find indispensable in my laboratory.

It is claimed by the makers that one can swage a plate, directly on the plaster model. That it can be done I will admit, but at a great expense of time and labor that is really not necessary when we can use a quicker method easier. I generally cast one die and counter as usual and conform to this, then finish on the plaster model itself. By this means we have results not obtainable by any other method I know of.

The method of casting the die, when this device is to be used, is extremely simple, as we do not need an accurate die; all the undercuts on the model can be ignored—simply a die to strike plate to partially the shape desired. The shot, when plate is on the model, will force metal into all undercuts and give an even pressure to the plate.

So perfect does the apparatus do its work, that very often the only way I can separate the plate from the model is to cut the model away. This device, if used with a powerful screw press, gives better results than can be obtained by the hammer, and with less danger of fracturing the model. In fact it approaches the hydraulic press in the manner of working, avoiding having to cast the special dies and counters which have to be used with it.

A plate on being warped can be restored to its former shape by this means, and even after the teeth have been attached to the plate, teeth and all can be swaged without fracturing the porcelain. Only when we do this a little more care is necessary. The warping of a plate is usually at its weakest point where the solder or whatever the mode of attachment is, does not protect it against bending, so that it is very easy to reduce the plate, and the pressure at this point will bend plate to the model. There

are other ways of reducing a warped plate, but this is the simplest and most accurate.

HYDRAULIC PRESS AND METAL STAMPING.

Dr. Trueman, in his article written for the *American System of Dentistry*, refers to the use of the hydraulic press.

He says there is no question that a firm, steady and continuous pressure upon the dies is more effective in shaping a thin piece of metal between them than the repeated blows of a heavy hammer. This in the arts is an accomplished fact. Metal stamping is exclusively done by exerting a force of this character. The chief difficulty of applying this method to dental work arrives from the impossibility of so constructing the dies that the applied pressure shall be equally distributed upon the surface.

In the arts, where the object is to duplicate, rather than perfectly fit a plate, the desired object is readily accomplished, while in dental work, the forms, character and method of making the dies and counters render this exceeding difficult.

The practical usefulness of these machines is questioned. In skillful hands they may accomplish all that is claimed. Even then they do more than can readily be accomplished by the skillful use of the hammer. While the process of making the dies for swaging is far simpler and more certain in its result than any method I have seen for making dies to use with a press.

ALL SORTS.

Practical Bridge-Work for Difficult Cases.

Dr. Thos. P. Hinman read the following before the Georgia State Dental Society:

"The first case we shall consider is one on the lower jaw where the first bicuspid is in the mouth; the second bicuspid and two molars are out, and the wisdom tooth remains. Of course you can see that it would be folly to make a fixed suspension bridge for this case, and I have hit upon a rather unique plan for such cases.

The first thing to be done is to crown the wisdom tooth and first bicuspid with crowns having perfectly parallel sides, but having properly articulated cusps. On these crowns bands of clasp-metal are made to fit

them closely. You will notice that I say clasp-metal, for this is the only metal that is adequate for this purpose, possessing both hardness and rigidity. To make these bands fit the crowns perfectly, each crown is embedded in Melotte's moldine and then withdrawn; metal is poured into the form thus made, giving you a metal model of each. To this, you can readily see, the clasps are fitted. The next step is to take an accurate plaster impression of the alveolar ridge, between the abutments, and a metal die and counter is made, and a 20k. gold plate, 26 gauge, is swaged to fit the ridge. After this is done, the crowns, holding in position the bands, are placed over the teeth in the mouth, and the gold plate swaged to fit the ridge, is also placed in position. An impression of this is taken in plaster, the crowns being removed from the impression after it is taken from the mouth, but allowing the clasps to remain in the impression. A plaster and marble dust model is now made of this, which shows the relations of the bands and plate. The bands are now firmly soldered to the gold plate; after this is done it is carried to the mouth, after putting the abutment crowns in position, to see if the relations are correct. A proper bite is now taken, using the gold plate as a base, and gold plate or saddle back teeth are now soldered in position. The crowns are now set permanently in the mouth, but before the cement is thoroughly hard the bridge is slipped into position. This insures the correct relation of the abutment crowns and of the bridge. It should be allowed to remain in position for at least six hours before removing to clean off excess of cement. Your bridge now is complete, and you can readily see that you have a practical removable bridge, which can be readily cleansed, but gets its support from the gums entirely, no unnatural strain coming upon the abutments, as would be the case in a fixed bridge. I have several such cases in the mouth, which have proved themselves a great satisfaction to my patients as well as to myself.

Case No. 2. The following method is used in cases where the teeth crowned for abutments are very short, and is used exclusively on the lower jaw. After the crowns are prepared in the usual manner, the impression taken, and the plaster and marble dust model made, holding the crowns in their relative positions, a platinum bar, about 16 gauge, is soldered on the approximal surface of one abutment, extending to the opposite. Cusps are now swaged up to fit the intermediate space, and are waxed upon the top of this platinum bar. The case being now invested and turned cusp downward, solder is flowed around the bar, and filling the cusps solidly. The case is now taken and filled from both sides, so as to leave the solder over the platinum bar the greatest thickness at that point, or, in other words, the bridge is bevelled from both sides instead of only from the lingual side, as is done in ordinary cases.

This gives you what might be called a double cleansing space, and leaves no room for the accumulation of filth; but, at the same time, giving you the greatest possible strength. I have a case of this description which has been worn about a year, and has given great satisfaction, whereas a bridge of the other description, made after the old style, of the simple lingual cleansing space, caused the gum to grow up around the bridge in such a manner as to make the bridge unbearable in the mouth, and I devised this plan overcoming the difficulty.

I leave these little methods with you, hoping they will be of as much benefit to you as they have been to myself, and trusting I have made it plain."—*Southern Dental Journal*.

Trigeminous Reflexes.

In a paper read before the Southern Dental Association, and published in the *American Dental Weekly*, Dr. H. H. Johnson cites the following cases:

Case 1, a gentleman, lawyer by profession, had been treated for ten days for a severe neuralgia centered in the region of the left temple. No pain of any character had been felt in his teeth. Through desperation he came to me hoping that the trouble might be located in his mouth. After careful examination a cavity was discovered in the posterior proximal surface of the second superior left upper molar, corresponding to the side of the head the pain had been centered in. The cavity was very difficult of access, having commenced at the gingival margin and extended upward towards the alveolar border. In attempting to explore it the probe slipped accidentally into the point of exposure. The patient involuntarily clasped his hand to his temple, saying: "That felt as if you had driven a nail into my brain right there." Mind you no pain was felt in the tooth. The nerve was killed, the tooth filled, and every twinge of pain experienced during the treating and filling was felt in the temple and *not in the tooth*. No pain was ever felt after the operation.

Case 2, a married lady, about 35 years of age, had been treated by physicians, for chronic neuralgia, for several months. She had had no trouble in her teeth, but came hoping that something might be found to give relief. Both lower third molars were filled with cement on the buccal surface. Pains were not confined to any one side of the head or locality. Removed one of the fillings and destroyed the nerve, the pain ceased on that side. Being encouraged by this, removed the other filling and destroyed that nerve also. This completely cured the other side with no return of pains for over a year. She often speaks of her terrible

agony of suffering and how easily I relieved her after the physicians had treated her so long. I may state that I found pulp nodules in both these teeth.

Case 3, a married lady, about 30 years of age, had been suffering intermittently with neuralgia of the left side of her face and head for several years. She had exceptionally fine teeth, none having ever required to be filled, except some in front. Repeated examinations had not revealed the source of trouble. From hard brushing, the gum had receded some around the first upper molar left side. As the trouble was becoming quite annoying, I determined to try for pulp stones in this tooth. The nerve was accordingly killed, which proved very stubborn. Upon opening the pulp chamber, a layer of secondary dentine was found to have covered the entire floor of the chamber and almost cut off communication with the roots. The tooth was filled and relief followed immediately.

Teague's Hints.

SANDARAC VARNISH is undoubtedly the best parting fluid now in use for separating a plaster cast from an impression, since it gives the former a most beautiful, smooth surface. The varnish should be kept in a glass-stoppered bottle, while the brush (a small, long-handled "marking brush") should be kept in another bottle filled with wood alcohol, stopped with a cork through which the handle should protrude.

IN INVESTING SHELL CROWNS for soldering, it is better to pack the interior with asbestos fiber first, as it is less liable to shrink away than the investing material, thus preventing "burnt holes" where the metal is unsupported.

THE "CROWN METAL" of the trade is a delusion. There is considerable more price to it than pure gold. It is best to make it by shrinking the desired thickness of gold and platinum together and rolling smooth through the mill.

A HAND MALLET AND CHISEL used as a mallet and plugger, are more tolerable to a patient when "breaking into" a cavity, than the punching method.

A SANDPAPER DISK, reinforced with a No. 31 soft rubber wheel on a screw-head mandrel, works nicely. Try it.

A HARD RUBBER DISK, charged with corundum, will cut still better if dipped in a mixture of glycerin and corundum flour.

A QUICK WAY OF FLASKING is to mix enough plaster to fill the flask. Fill one-half and put in the plaster cast on plate, shape the surrounding

soft plaster so as to have no undercuts. Cover this, filled half, with a piece of tissue or bibulous paper, brush it over with soap-solution, put on the ring of the other half and fill up with the remaining plaster while yet soft and put on the top of the flask. It can be opened as readily as if two mixes had been made.

PAPER, cut into squares, is useful to have in the drawer with extracting instruments, on which to put and with which to wrap up extracted teeth, and also to have at hand in the laboratory on which to place impressions, investments and the like to keep the plaster from sticking to the table or board.

MORPHIN AND COCAIN ARE USELESS ADJUNCTS TO A NERVE PASTE and tanning or embalming ingredients should be eliminated, as should also anything that coagulates albumin. We need in a paste, a mixture that will correct acidity, soothe pain, and devitalize; therefore the old-time formula has been found to be as efficient as is to be had, viz.:

Arsenic - - - - - 1 part.

Prepared chalk or calcined magnesia - - - 9 parts.

Oil of cloves sufficient to form a paste.

OIL OF CLOVES comes nearer to being a specific for toothache than any drug known. It is decidedly best to allow the nerve to slough and then use germicides, then to tan or embalm it and extract it with the attendant pain and shock to the patient.—*Amer. Dental Weekly.*

Method of Bridge-work, Using English Tube Teeth.

This method of bridge-work I find invaluable for restoring a case frequently presented, involving the loss of the bicuspid and one or two of the molars, and its simple construction and natural appearance should commend itself to those interested in this form of artificial restoration.

The case represented shows loss of one molar and two bicuspid, and was very successfully treated by this system. An impression was first taken in plaster, after having trimmed the sides of the molar and canine slightly to admit of the crowns, which are to act as abutments, being readily removed; the model being made, a gold crown was then constructed to exactly fit the molar tooth, and a shell-crown to act as an abutment on the canine. After having fitted these crowns carefully to the teeth in the mouth, a plaster impression was next taken of the part to be restored, with the crowns in position on the natural teeth. A piece of No. 8 gold plate was then fitted between the space intervening the abutments of suitable width to allow of tube teeth being let down on it, having one edge resting on the gum margin, the other being raised at an angle to form a self-cleansing space.

Great care should be taken when deciding at what angle to fix this small plate, as it forms what I might term the keystone of the whole method. The tendency is to make an angle at the junction of gum margin and plate, thus throwing the outside or palatal edge too high; at the same time it is equally wrong and perhaps a greater fault to cramp the self-cleansing space by making the angle too small or acute.

The position of the bite will do more to determine this position of plate than anything else; if there is plenty of room between the gum margin and occluding teeth greater angle can be obtained. If the bite space is short the angle will require to be much smaller; in all cases another point to be remembered is, fix the plate at such an angle that whilst acting as an efficient cleansing space, plenty of room is left to admit of a good portion of the back part of the tube tooth to be exposed.

Should the ridge be of an uneven character, it is better to build up in wax the form the plate has to take, and swage a piece of No. 9 plate to the surface thus formed. This will be the means of getting an accurate fit at the line of contact of the plate and gum margin. Proceed to wax in position this small plate to the abutments, invest in plaster and sand, and solder strongly at the joints.

The remaining portion of the work is simple enough. Tube teeth are fitted in position, as closely as possible to insure strength of the completed bridge, care being taken to get the posts very strongly soldered to the plate, in case of accident after fixing in the mouth, after which the outer edge of the plate is ground flush with the tubes, the teeth fixed with sulphur or cement, and the piece well polished, special care being taken to stone smoothly the junction of teeth and plate, making one continuous joint, and to polish highly and smoothly the strip of plate under the teeth.

The bridge is then ready for insertion in the mouth, which is cemented in position in the usual manner.

The claims for this style of bridge are—

First. The dummies being of porcelain, are not so unsightly as gold-capped teeth by the usual method, and are thus easily kept clean, there being no great quantity of gold surface to tarnish and gather offensive matter.

Second, The self-cleansing space being formed by one piece of metal, is easily freed of particles of food, and I think answers the purpose perfectly.

Third. The easy manner in which the porcelain teeth can be repaired commends itself at once, without any further statement from me, and judging from the strength of tube teeth, this should not often occur.

Should a crown tooth be decided upon instead of the shell-crown, it

should be constructed by fitting a collar to the root, as for a Richmond crown, but leaving the back portion of the collar well up. A piece of gold plate is then soldered to the collar, the pin attached, and, if possible left sufficiently long to take tube tooth. If not, a new post will require to be soldered to take tube tooth.—A. W. W., in *The Dentist*.

A Method of Repairing Richmond Crowns.

To repair one of the four superior incisors that has a Richmond crown from which the porcelain has been scaled or broken, perhaps by too prominent occlusion with an inferior tooth, the following method is suggested to save removing the gold fixture and pin, which may be difficult if the pin be close fitting and of platinum.

Cut a longitudinal slot in the remaining backing, cutting with a file so that the under side will be wider than the top, of the dovetail order. Select a tooth that will be as thin as the one broken, and with longitudinal pins, to which solder a little platinum trough or box the shape of the dovetail slot in the backing. A long, narrow piece of platinum should be fitted over the pins and the pins spread slightly to hold it; paint this with borax cream, also the inside of the little platinum box, which will be wide across the top and pressed in close to the pins at the plate. Solder, and finish with file to conform to the slot. Set it with cement.

If done accurately, it will be neat, strong and serviceable, and the neck will fit under the band as before.—T. L. SMITH, in *Items of Interest*.

New Publications.

CATAPHORESIS OR ELECTRIC MEDICAMENTAL DIFFUSION AS APPLIED IN MEDICINE, SURGERY AND DENTISTRY. By William James Morton, M.D., author of "The X-Ray, or Photography of the Invisible." One volume, 8vo., illustrated. New York: American Technical Book Co., Pub., 1898. Price, half morocco, gilt top, \$5.00.

The author of this work has been a thorough investigator and what he has presented in this book of 254 pages is of great value not only to dentists but to physicians as well. Part I. is historical, and treats first, of early experiments, extending back to 1747; second, the modern revival, beginning with Erb, 1884, who introduced medicines through the skin, and discovered their pre-

sence in the saliva and urine of the subject. J. Leonard Corning, of New York, in 1886, cited instances where he had used cocain cataphorically for neuralgic pain. Dr. D. F. McGraw, however, was the first dentist to use cataphoresis for the anesthetizing of sensitive dentine. This was in 1888. The writer points out the developments in dental surgery, and states briefly what he, himself, has contributed to the subject. Part II. devoted to Physics and Physiology, treats of Elementary Electrical Principles, Sources of Electricity, Simple or Chemical Osmosis, Electrical Osmosis or Cataphoresis, Electrolysis and Cataphoresis, Physiological Experiments. Part III.—Apparatus and Outfit—treats of Electrodes for Medicinal Diffusion, Electrodes for Metallic Electrolysis, Dental Electrodes, Batteries, Rheostats, Medicaments, Central Station Circuits. Part IV.—Applications in Dental Surgery—Anesthetization of Sensitive Dentine, Anesthesia of the Gums, Antisepsis or Sterilization of the Teeth, Diffusion from Soluble Electrodes, Part V.—Applications in Medicine and General Surgery—Simple Cataphoresis, Cataphoric Medication or Electric Medicamental Diffusion, Electro-Cocain Local Anesthesia, Electric Diffusion from Soluble Electrodes.

The book is well written and the most important portions of the subject are made particularly clear. Dr. Morton is well known as a teacher and in this work he has given the profession a book well worthy of consideration and study.

DESCRIPTIVE ANATOMY OF THE HUMAN TEETH. By G. V. Black, M.D., D.D.S., SC.D. Fourth edition. Philadelphia: S. S. White Dental Mfg. Co., Pub., 1897.

That this work has reached a fourth edition in so short a time is the best kind of a recommendation for it. The book has met with such general approval and is so well known to the profession it does not seem necessary to summarize its contents. Some few changes in the text have been made and consist in the introduction of tables of the angles of teeth and the angles of surfaces of teeth, intended to aid the student in fixing these in his mind, and in the introduction of the word *embrasure* as an additional technical term.

Those openings between the angles of the teeth, formed by

the rounding of the proximate surfaces toward the buccal on the side of the proximate contact, and toward the lingual upon the other, have never had a specific name, and the word *embrasure* has been introduced to supply this need in nomenclature.

Dr. Black being the author of the book, is a sufficient guarantee of its excellence, and if any of our readers do not possess the work we advise them to secure a copy.

ANNOUNCEMENT.

Messrs. Lea Brothers & Co. announce for early publication the following books by eminent authorities. Complete catalogues of the publications of this firm may be had by addressing their Philadelphia or New York house:

A TEXT-BOOK OF DENTAL PATHOLOGY, THERAPEUTICS AND PHARMACOLOGY. Being a Treatise on the Principles and Practice of Dental Medicine. By Henry H. Burchard, M.D., D.D.S., Special Lecturer on Dental Pathology and Therapeutics at the Philadelphia Dental College, Philadelphia. In one handsome octavo volume of about 550 pages, with 400 illustrations.

A TEXT-BOOK OF ANATOMY. By American authors. Edited by Frederick Henry Gezrish, M.D. In one handsome octavo volume, copiously illustrated in colors.

DISEASES OF THE NOSE, THROAT, NASO-PHARYNX, AND TRACHEA: A Manual for Students and Practitioners. By Cornelius G. Coakley, M.D., Professor of Laryngology in University Medical College, New York. In one volume, 12mo., of about 400 pages, with numerous illustrations, many of which are in colors.

A MANUAL OF OTOLOGY. By Gorham Bacon, A.M., M.D.

THE TREATMENT OF SURGICAL PATIENTS BEFORE AND AFTER OPERATION. By Samuel M. Brickner, M.D.

THE PRINCIPLES OF TREATMENT. By J. Mitchell Bruce, M.D., F.R.C.P.

DISEASES OF WOMEN. By Francis H. Danenport, M.D.

A TREATISE ON GYNECOLOGY. By E. C. Dudley, A.M., M.D.

MANUAL OF SKIN DISEASES. By W. A. Hardawap, M.D.

THE PRINCIPLES AND PRACTICE OF OBSTETRICS. By American authors. Edited by Charles Jewett, M.D.

Lea Brothers & Co., publishers, 706 Sansom Street, Philadelphia; 111 Fifth Avenue, New York.

Orthodontia—A Correction.

IN the article, "Operative Orthodontia," published in the April OHIO JOURNAL, the classification of mal-occlusion should have been credited to Dr. Edward H. Angle.

SOCIETIES.**New Jersey State Society.**

THE twenty eight annual session of the New Jersey State Dental Society will be held at Asbury Park, commencing July 20th, and continuing the 21st and 22d. The commodious and pleasant "Auditorium" has been secured for the sessions, with unlimited space for clinics and exhibits. Papers and clinics from many eminent dentists have already been secured. Preparations are being made for the largest display of electrical exhibits, of appliances for the use of dentistry ever before given. 110 and 500 volt current attainable. The Hotel Columbia adjoining has been secured for headquarters for members and visiting friends. Rates will be \$2.50 and \$3.00 per day.

CHARLES A. MEEKER, D.D.S., Secretary.

Tuscarawas Valley Dental Society.

OFFICERS elected for the following year: President, F. D. Davis; Vice-President, J. H. Wible; Secretary and Treasurer, L. W. Ballard. Next meeting will be held at Canton, Ohio, Tuesday, May 17.

C. L. SLUTTER, Secretary.

Resolution Regarding the Licensing of Dentists.

AT a meeting of the Tuscarawas Valley Dental Association, on June 11, 1898, it was—

Resolved, That it is the sense of this meeting that this society

generally condemn the careless and almost entire disregard of the dental law of the State of Ohio, especially in regard to registering dentists from "fake" colleges, and also to granting certificates to those who are not entitled in various ways and for various reasons.

And the Society further requests, That the Secretary of the Dental Board shall, on application of an applicant, not accompanied by a *bona fide diploma*, issued by a dental college of good standing, inquire by letter or otherwise of two reputable dentists in the vicinity from which the application comes whether the same is regular and the applicant entitled to same.

Vermont State Dental Society.

At the twenty-second annual meeting of this society, the following officers were elected for the ensuing year: President, J. A. Robinson; First Vice-President, K. L. Cleaves; Second Vice-President, Henry Turrill; Recording Secretary, Thomas Mound; Corresponding Secretary, Grace L. Bosworth; Treasurer, W. H. Munsell; State Prosecutor, G. W. Hoffman; Executive Committee, C. W. Steele, J. E. Taggart, J. A. Pearson.

Next meeting to be held at Burlington, the third Wednesday in March, 1899.

THOMAS MOUND, Sec'y.

Appointment and Qualification of Delegates to the National Dental Association.

"ARTICLE III., section 3, of the by-laws, states that all delegate members shall be practitioners of dentistry. They shall be received only from permanently organized State dental societies. They shall be elected by ballot at some regular meeting of their society, and shall be members who have done meritorious work for the profession; but no person shall be received as a delegate who is in arrears for dues to this association."

Also "Article IV., Section 1, Each State society may send one for every ten of its active members, as delegates to this

association for one year, upon complying with the requirements of its constitution; but no society shall be entitled to representation that does not adopt or substantially recognize the code of ethics of this association."

The fact that the American Dental Association received delegates from both local and State societies, renders it necessary to call attention to the fact that delegates to the National Dental Association will be accepted only from the State societies, and that such delegates must be elected by ballot at a regular meeting of the society."

By request of the president.

EMMA EAMES CHASE,
Cor. Sec'y National Dental Ass'n.

April 4, 1898.

Southern Branch of the National Dental Association.

OFFICERS elected for the ensuing year are as follows: President, W. E. Walker, Pass Christian, Miss.; First Vice-President, T. P. Hinman, Atlanta, Ga.; Second Vice-President, H. H. Johnson, Macon, Ga.; Third Vice-President, E. F. Adair, Harmony Grove, Ga.; Treasurer, B. D. Brabson, Knoxville, Tenn.; Corresponding Secretary, C. L. Alexander, Charlotte, N. C.; Recording Secretary, S. W. Foster, Atlanta, Ga.; two members on Executive Committee for three years, I. Simpson, Rock Hill, S. C.; E. G. Quartlebaum, Columbia, S. C.

National Dental Association—Division of the East.

AT the request of William Jarvie, V. H. Jackson, W. W. Walker, of New York; S. G. Watkins, B. F. Luckey, of New Jersey; E. T. Darby, D. N. MacQuillan, of Pennsylvania; L. D. Shepard, of Massachusetts; H. A. Smith, of Ohio, and G. E. Hunt, of Indiana, a meeting of the members of the National Dental Association residing in the East, is called at Odd Fellows' Temple, Albany, New York, on Thursday, the 12th day of May, 1898, at 2 o'clock, to organize a Branch of the National Dental

Association, and to transact any other business which may properly come before them.

As this meeting is coincident with that of the New York State Dental Society, any member obtaining a certificate when he purchases his railroad ticket will be entitled to reduced return fare.

Reduced rates at Kenmore Hotel.

THOMAS FILLEBROWN,
President National Dental Association.

JAMES MACMANUS,
Vice-President National Dental Association for the East.

Second Tri-State Dental Meeting,

HOTEL VICTORY, PUT-IN-BAY ISLAND, LAKE ERIE, OHIO,

JUNE 21ST, 22D, 23D, 1898.

THESE meetings are open to any reputable Dentist, his family and friends. There is no routine business, no election of officers, no election to membership, no dues—not a thing for you to do but to discuss and enjoy the program, those present and the entertainment—in short, it will be one time in your life that you have not a thing to worry about.

At the first Tri-State Dental Meeting, held in Detroit, June, 1895, we had about five hundred Dentists present. It is said to have been the largest and most enthusiastic meeting in this country, except the International Congress at Chicago. Indications point to a still larger meeting this year at Put-in Bay. When you receive the program, you will see an array of talent not often got together at one meeting. Some of it will be entirely new and original, and mind you we will be together during the whole meeting, so you need not fail in getting all the discussion in and out of the sessions you may desire. Among the essayists selected for the meeting are: Drs. H. A. Smith, Cincinnati; S. B. Dewey, Cleveland; G. W. Cook, Chicago; C. S. Case, Chicago; W. C. Barrett, Buffalo; G. E. Johnson, Fort Wayne; Alexander Jameson, Indianapolis; S. Carl Huber, Ann Arbor; S. H. Kellogg, M.D., Battle Creek, Mich.

Hotel Victory is selected as the place of meeting for so many

reasons that it is impossible to give them all without writing a book.

The hotel is one of the finest in the land. Large, airy, splendidly equipped, a dining room that will seat 1200 to 1500, a band to furnish music, a meeting hall that seats 700 to 900, an abundance of committee rooms, ample parlors, bath rooms, in fact all you can ask for at special rates of from \$2.00 to \$4.50 per day.



STONE'S COVE, PUT-IN-BAY.

The lake ride, in order to get to Put-in-Bay, is a most charming excursion. To those who have enjoyed lake travel, nothing need be said; but to those who have not, it may truthfully be said you have denied yourself one of, and perhaps the finest water trips the world affords. Boats can be taken from Cleveland, Sandusky, Toledo and Detroit. There will be from Detroit, a morning boat; from Toledo, morning and afternoon boat; from Sandusky, morning and afternoon boat: from Cleveland the time of sailing has not yet been determined. As quite a large number will go to Toledo, a headquarters will be established at the Boody House, to be in charge of Dr. Barber, where you can get all accommodations and information regarding your boats, etc. Boody House is near the dock.

Put-in Bay Island is an historic point. About this island

hovers the recollections of a Great Naval Victory, which, through the pluck of Yankee Sailors, gave this nation right of way on the great lakes.

This is an ideal place to bring your wife. When the meeting is held in a city, your wife finds it pretty dull business to sit in a hotel room alone while you attend the sessions, but here they can come and go at will, without escort, visit the various beaches, boat ride, fish, swim, trolley ride, play golf, bicycle ride, chew



CLIFF AND BATHING BEACH IN FRONT OF HOTEL VICTORY.

gum, or indulge in any other athletic sport they may enjoy. There will most likely be some special entertainment provided that they will enjoy. Bring all the ladies.

The meetings, the exhibits, the living, will be under one roof. We will be ALL TOGETHER ALL THE TIME.

Get up your excursion parties. For instance, the Cincinnati Dentists are arranging to go together, via C. H. & D. R. R., personally conducted by President of State Society.

[We are promised the complete program for our June issue.
—EDITOR.]

OUR AFTERMATH.

HONORED.—Mrs. J. M. Walker, the efficient dental society reporter, was elected an honorary member of the Southern Branch of the National Dental Association, at the recent meeting at St. Augustine, Florida.

THE DENTAL JOURNALS print what the profession utters, when it bears the signs of honest conviction, and is new enough to take. If you want better, write it yourselves, and contribute it. The greatest trouble is, the publications call for bread, and you give them a stone. You expect brick, but you give them no straw.—*Dr. Stubblefield in Dental Weekly.*

POOR DENTISTRY COSTS A LIFE.—H. E. Pratt died yesterday after a two days' illness. Last Tuesday he had the nerve in a tooth removed, and allowed a careless dentist to cap over the opening at once. Before many hours had elapsed the tooth began to give him great pain, and he grew rapidly worse. Physicians pronounced it a case of blood poisoning, and all efforts to save his life proved fruitless.—*Chicago Tribune.*

ELECTRICAL MAGAZINES.—The number of periodicals dealing exclusively or largely with electricity amounts to sixty-six. Of these, eighteen are published in France, fourteen in the United States, twelve in Germany, six in England, three in Switzerland, two in Austria, Belgium, Holland, Italy, and Spain, and one in Canada, Japan, and Russia. The oldest electrical paper now in existence is the *Annales Télégraphiques*, published since 1855 in Paris, France. The second oldest is *The Journal of the Telegraph*, published since 1868 in Chicago, and the third, the *Journal Télégraphique*, published since 1869 in Berne, Switzerland.—*L'Industrie Electrique.*

DENTISTS IN THE ARMY AND NAVY.—At the meeting of the Southern Branch of the National Dental Association, a resolution setting forth the necessity for the appointment of dental surgeons to the army and navy, and urging Congress to pass a law to this end, was adopted without a dissenting voice. To carry this resolution into effect, the following gentlemen were appointed a committee to act in harmony with a like committee to be appointed by President Fillebrown:

J. A. Chapple, Atlanta, Ga.; E. P. Beadles, Danville, Va.; B. Holly Smith, Baltimore, Md.; M. F. Finley, Washington, D. C.; Henry B. Noble, Washington, D. C.—*Amer. Dental Weekly.*

PROFESSOR W. D. MILLER AS A DENTIST.—It has occurred to me that while Prof. Milier is widely known in bacteriology and antiseptis, he is not so well known as an every day practitioner and man. And as I have been in close personal and professional contact with him during a period of two and a half years, I feel it to be a privilege to be able to state that he is a thoroughgoing dentist, working from three to four hours every morning at the chair—rapidly, faithfully, successfully. He is a very careful, painstaking operator who keeps abreast the advances made by the profession, and is educating his patrons up to a higher appreciation of the value of gold in preserving teeth.—*F. S. Buckley in Dental Review.*

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CONTRIBUTIONS.

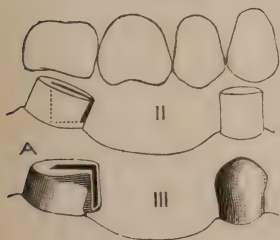
Malposed Molars as Bridge Piers.

BY HUGH B. MITCHELL, D.D.S., CANTON, O.

BRIDGE workers will recognize in Fig. I. a sketch of that frequently presented case in which the lower second molar is so badly tilted, anteriorly, as to prohibit the accurate adjustment of a bridge of usual type.



Practical results, under observation, seem to have demonstrated that the obvious difficulty can be successfully overcome as indicated in Fig. IV.—a *mortised* molar cap, cemented separately in position, ready to receive the *tenon* on end of the bridge above (B.)

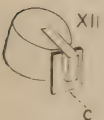
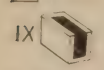
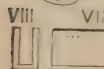


As this bridge differs from the common type only in the use of a modification of that ancient constructive principle, the "mortise and tenon joint," the description will deal mostly with the construction and adjustment of these related members.

The procedure, divested of superfluous manipulative details, is as follows :

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

Devitalize and fill roots of molar. Shape natural crowns as indicated in Fig. II.; sides parallel, in each case, to axis of the tooth and corresponding, with relative uniformity, to the circumferential dimensions of the cervix. Cut a mortise in molar crown, as indicated in Fig. v., about $\frac{1}{8}$ inch wide, opening in



line with, and its floor and posterior wall forming a right angle to, the axis of the bicuspid; as shown in dotted line, Fig. II. Shape on this molar crown a close fitting ferrule. Trim its upper rim flush with top of crown. Scratch-mark on interior surface of ferrule, the dimensions of the anterior opening of the mortise, and cut out the notch in band thus indicated. Solder a plate on top ferrule; trim, and cut an extension of opening in band through center of this top plate, making the slotted cap indicated in Fig. vi.; this slot corresponding, when superimposed, to the mortise in natural molar crown.

A rectangular piece of *pure gold*, 24 gauge, is then, with pliers and hammer, bent over and accurately adapted to the lower edge and sides of the piece of 14 gauge plate (the *tenon* of the future bridge) indicated in Fig. vii. and given the shape of Fig. viii., end. This tenon should be very slightly *wedge-shaped* from upper to lower edge. A piece of pure gold should be soldered on end of Fig. viii., making thus the casing shown in Fig. ix., which latter should then accurately fit sides, lower edge and end of tenon, Fig. vii., when same is inserted for trial.

Place cap on tooth and insert casing in slot (which it should fit tightly), carefully adjusting it to the due angularity indicated by dotted lines in Figs. x. and II. Scratch-mark, to provide against displacement, remove and solder to place—note Fig. x.

Now "build up" top of cap around exposed upper edges of casing described, with wax; contouring same to approximate occlusion with upper molar or molars. Invest cap to top-level of wax; remove latter, and in the matrix thus formed melt 18 carat solder; blocking up with small chunks of plate any parts of top which may be necessary to satisfy a general occlusion with upper molars. By subsequent trimming and contouring, aided, if need be, by the intelligent removal of the sharp points of any unduly

prominent cusps on antagonizing teeth, a satisfactory occlusion is obtained.

In Fig. III. (an illustration of *both* caps in position) the completed mortised molar cap is indicated at A—the somewhat flat top shown being necessitated, in the case herewith illustrated, by an abraded antagonist above.

Assuming the upper edges of pure gold casing are still exposed, the cap is removed, tenon inserted, and ground down flush with these edges (Fig. XI.), leaving end of tenon project, as shown, sufficiently to fit into a slotted piece of pure gold (Fig. XII.—C), closely adapted to exposed end of casing. After fitting, remove tenon, with attached plate or shield, and place both caps in position on teeth, as shown, Fig. III. Secure bite; then fill slot in molar with wax, filling undercut on mesial aspect of same with like material, to prevent dragging. Take plaster impression—which will come away with bicuspid cap only. Remove molar cap, place in impression, and make articulated model with two caps *in situ*. Readjust tenon and shield. Assemble bridge teeth, fitting posterior dummy to close contact with shield and exposed end of tenon.

In investing for soldering, completely submerge molar cap and contained tenon back of pure gold shield; then solder bicuspid cap and assembled dummies to exposed end of tenon, allowing solder to flow against anterior face of shield. The result is a separable bridge, consisting of the two parts illustrated in Fig. IV. Now make a trial adjustment of the two parts in the mouth. If mortise and tenon fit closely, as they should, then permanently cement molar cap in position; not forgetting, while cement is still plastic, to *temporarily* adjust other part of bridge and while thus in position to “set” cap to place with mallet and driver. When cement has firmly set, remove the still separable bridge section; adjust rubber dam and set bicuspid cap and tenon in chloro-percha, and do not hurry removal of rubber dam until exposed upper edges of pure gold casing are burnished tightly against tenon. In recommending chloro-percha it is assumed that the bicuspid cap and tenon fit as they should—very accurately. The chloro-percha is intended more for a stopping than a cement.

A few concluding notes :

Unless it can be done with certainty, do not attempt to make

caps fit at cervix of tooth; rather let this edge be exposed, clear of gum margin.

Do not be tempted to use gold thin because more easily manipulated; thus multiplying the probabilities of its being as easily strained and stretched under the stress of mastication.

Construct caps on prepared crowns—not models—and avoid fantastic and unnecessary festooning; the shortest way around the tooth makes the strongest margin.

Don't "feather" margin of cap to an irritating "wire edge" thin enough to flare under the expansive pressure of the cement in adjusting; burnishing such margins to smaller circumference is a delusion and a snare.

Finally, it is important that the mortise, in molar cap described above, extend back into crown sufficiently so that the end of tenon rests at a point quite beyond what may be called the mean line of impaction; the whole body of the tooth is thus compelled to sustain its share of the force of occlusion in a direction generally parallel to this line, and the tendency, which would otherwise exist, to further luxate and thus wedge the bridge toward the bicuspid, is neutralized.

A dovetailed tenon may suggest itself as a good idea, but the bridge described seems to be satisfactory in the cases tried.

Electrolytic Products of Dental Medicines.

RY WESTON A. PRICE, CLEVELAND, O.

THERE has been a demand from the profession and a request from Dr. Bethel, for some data as to the actual ions and their direction of movement, produced by passing an electric current through various dental medicines. The discussions upon the theoretical phases of the question have, on account of the breadth of that subject, not gone into a discussion of the practical application of the known laws to the uses of the common medicaments.

In passing the electric current through any medicine capable of conducting the current, there will be a movement of a part of some of the molecules in each direction. For example, in passing a current through a solution of sodium chlorid, some of the molecules will divide, the sodium ion going to the negative pole and

the chlorin ion going to the positive pole. If platinum electrodes be used, the amount of sodium liberated at the negative pole will be equal to the chlorin liberated at the positive pole. And each, in any solution, will be an exact expression of the amount of current that has passed. These may react upon the electrode or upon the solution about the electrodes, as would happen with the chlorin in this case should we use copper or silver, or in fact almost any metal except platinum or iridium. Or as occurs with the sodium in this case, which reacts with the water, forming sodium hydrate, NaOH , with the liberation of hydrogen. It is, in fact, very seldom that the ions themselves are liberated; they usually react with the electrode or with the fluid, with the liberation of a gas or a metal. All processes of electro-plating are a simple electrolysis.

Space will not permit of any suggestions as to what electrodes or reagents would be indicated in the treatment of the various pathological conditions as pyorrhea alveolaris and bleaching teeth. We will restrict ourselves to the manner in which the molecules will divide and the direction these parts will move, giving in some cases the rapidity of migration. This latter quality is expressed by stating in centimeters the distance the ion travels in one second under a current of a potential fall of one volt per centimeter of solution, temperature at 18° centigrade. For convenience the one-hundred-thousandth of a centimeter is used instead of decimals; thus hydrogen travels 0.0032 centimeters per second, which is usually written 320, meaning 320 one-hundred-thousandths. This will be the meaning of these terms throughout this paper.

The more dilute a solution the greater per cent. of the molecules will be ready to take part in the carrying of the current up to a certain point of dilution, and this point is known as the point of complete dissociation. This point varies greatly with different substances, but with sodium chlorid is at about one in one thousand, at which concentration approximately all the sodium and all the chlorin would be taking part in the carrying of the current. This matter of concentration or per cent. of dissociation will not enter materially into the results of our practical work except at the extremes, and we need not consider it ordinarily. The reason for this is very simple, since in any solution capable of carrying the current there are always lots of free ions.

When any compound substance, capable of conduction, is held in solution it does not maintain its molecular form, but some of the molecules, or all at sufficient dilution, will divide into two or more parts, called ions, usually two, but sometimes three or four or more, each carrying an electric charge; some positive and some negative, but always an equal amount of the two kinds of electricity. This takes place without the passage of an electric current, and, indeed, no solution will conduct a current that does not contain free ions, for it can only do so by their movement and giving up their electric charges to their opposite electrodes. When a current passes through any solution the positively charged ions move toward the negative pole and the negatively charged toward the positive pole. By no other means can a current pass through any liquid, except a metal. Very many substances do not dissociate in solution, as sugar. Some others do so, but to a very slight extent. The former are perfect non-conductors or insulators to the current, while the latter conduct but slightly. These latter include many of our dental medicines.

In electrolysing hydrochloric acid, HCl , in water, H . will go to the negative pole and Cl . to the positive pole, where it will react with the electrode unless it be a very noble metal, and even then to a slight extent. If the current have a potential gradient of one volt per centimeter and the temperature about 18° centigrade, the H . ions will travel with a velocity of 320 one-hundred-thousandths of a centimeter per second, or approximately three inches in an hour, and the Cl . will travel to the positive pole with a velocity of 69, always carrying equal electric charges.

With sulphuric acid, H_2SO_4 , two H . ions will go to the negative pole and SO_4 to the positive pole, where it will react with the electrode or with the water, according to the following equation: $2\text{SO}_4 + \text{H}_2\text{O} = 2\text{H}_2\text{SO}_4 + \text{O}_2$. If a copper electrode were used it would unite with it, forming copper sulphate CuSO_4 , which would immediately dissociate and begin to assist in carrying the current, the copper forming a new ion and going to the negative pole and SO_4 to the positive pole.

With nitric acid, HNO_3 , the H will go to the negative pole and NO_3 to the positive pole, with a velocity of 64.

With silver nitrate, AgNO_3 , Ag will go the negative pole with a velocity of 57 and NO_3 to the positive pole.

With potassium iodid, KI , K will go to the negative pole

with a velocity of 66. and I to the positive with a velocity of 69.

With sodium hydrat, NaOH , Na will go to the negative pole with a velocity of 45 and OH to the positive pole with a velocity of 182.

With lithium iodid, LiI , Li will go to the negative pole with a velocity of 36 and I to the positive with a velocity of 69.

With ammonium hydrat, NH_4OH , NH_4 will go to the negative pole with a velocity of 66 and OH to the positive pole with a velocity of 182.

With hydrochlorat of cocain, $\text{C}_{19}\text{H}_{27}\text{NO}_4\text{HCl}$, all investigations so far indicate that $\text{C}_{19}\text{H}_{27}\text{NO}_4$ goes to the negative pole with a velocity of about 7 and Cl to the positive with a velocity of 69.

These determinations on cocain were completed too late to appear in their proper connection in a recent paper published in *May Items*. We are indebted to Prof. Morley, of the Western Reserve University, for these determinations on cocain hydrochlorat, which mean a tremendous amount of tedious experimentation. This means that the negative ion of cocain hydrochlorat will migrate about one inch into a tooth in one hour at a potential gradient of 25 volts.

I would like to call attention to the behavior of the Cl ion which goes to the positive pole. If that electrode be anything but the noblest metals, as platinum or iridium, it will react with it, forming the chlorid. It will even do this to some extent with gold, not enough to positively exclude it as an electrode in cataphoresis, though it is not nearly so good as platinum, with which the chlorine reacts, but very slightly. Copper or silver, or German silver, or any metals of their class, would almost produce a failure if used for the positive pole in cataphoresis, because they would form a chlorid with the Cl. and this would immediately dissociate, the metal forming the positive ion and go to the negative pole and the Cl. to the positive again. Thus in a short time this new compound would be carrying the current instead of the cocain hydrochlorat.

Almost any solution we may get hold of, unless prepared with the utmost care, will contain enough impurities to prevent us from determining by its conductivity whether it is an electrolyte or not, as for example, ordinary water, which is a splendid conductor, while absolutely pure water is almost as good an insu-

lator as gutta-percha. Such purity cannot be had, however, by ordinary means. For this reason we should expect the best results in cataphoresis, and in my experience we do, from freshly prepared solutions of as pure as possible a quality of cocain salt, in distilled water the purer the better, and never should we use anything but a very noble metal for the positive electrode, preferably platinum.

Under the head of this paper should properly come a discussion of the various agents used for bleaching teeth, in connection with the electric current. These would take too much space and may be made the subject of a special article. I will say, however, neither sodium peroxid or hydrogen peroxid, or even chlorid of lime, are found in qualitative tests of electrolysis, to behave as has been suggested.

It has been quite generally taught by some writers and quite generally believed, that in electrolysis, certain medicines move unchanged towards the negative pole, and certain others move toward the positive pole. THIS IS NOT SO, and every effort should be made to correct this terribly misleading impression. A part of the molecular contents of some of the molecules of that medicine go ineach direction and electro-equivalent parts in each direction. Electrolysis must not be confounded with osmosis, which is themovement of a substance held in solution as it diffuses to equalize the concentration.

Death from an Abscessed Tooth.

BY DR. J. H. NEELEY, PAULDING, O.

THE patient, a girl of twelve years, was brought to me by her mother and from her I learned the facts connected with the case. She stated that prior to September, 1896, the girl had been in the best of health. In that month she had a severe attack of typhoid fever, but recovered nicely. Soon after there was pain and marked swelling on the right side of the face. The inferior first molar, which was decayed, became loose and elongated. Fever again was present and the physician was called, who finding the cervical glands swollen, pronounced it a case of scrofula, and advised a course of treatment which was granted. No attention was paid to the tooth. When the physician next called

an abscess had formed and discharged on the face. The inflammation had subsided and the glands were again about normal. The verdict was "it is good," provided the discharge could be kept up so the other glands would not inflame and break, so for fourteen months the abscess was kept open. The patient became much weakened, and when I saw her the fistulous opening would admit the ends of my two thumbs. A compress was worn constantly, to keep the saliva from flowing out and to aid in taking food. The odor was very offensive. I removed the tooth, which was then a mere shell, the roots being entirely absorbed. The mother refused to let me even wash out the pus, but went back to her physician. I urged immediate removal of the diseased tissue, with a view to healthy granulations, but it was deemed unnecessary. That was the only time I saw the case, but was informed that the girl died about two months later. Blood poison was the verdict. I ask if it is any wonder she died after sixteen months absorption of those discharges! Perhaps I expected too much, but I have held that even at the time I saw the case if they had permitted a stopping of the formation and absorption of pus all might have been well.

I have given the history as it came to me. It points to a chronic abscess. If there was scrofula I could learn nothing of it till after the fever. It was suggested that perhaps it was a malignant sarcoma and cauterization would only make it worse, but that is hardly probable as the age was but twelve, and there was no noticeable induration of the lymphatics in that region.

Method of Bridge-Work.

BY J. B. SNYDER, D.D.S., BRYAN, OHIO.

SELF-CLEANSING spaces, so called, are a delusion and a snare. The method about to be described seems to be free from that serious and fatal defect. It is applicable more particularly to the molar and bicuspid region.

Gold or other crowns are adapted to the abutment teeth and a plaster impression is taken with the crowns in place. Fill impression with plaster and sand or Teague's compound. A strip of platinum is burnished to accurately fit the space between the

crowns. The cast covered by foil should be scraped somewhat. Foil can be held in place by applying a little dammar varnish to cast. Diatoric teeth to fill the space are fitted with gold tubes; the tubes are made of sufficient length and the teeth are driven in with a wooden mallet, the buccal aspect being cut away so as to expose but little metal at cervical border.

The teeth with tubes attached are now ready to be ground to fit the foil. Should the tubes be too short on the palatal side a little foil can be burnished to fill up the space.

After the teeth are all carefully ground to place, unite crowns, tubes and foil with hard wax, then remove porcelains and invest using plenty of 20k. solder. After finishing, cement porcelains to place. Leave no sharp places to cut and irritate the gum, as the fixture when placed will sink into that tissue the depth the cast has been trimmed. Some of the advantages that might be enumerated are, that there are no spaces for food to lodge in and under, an advantage worth considering, judging from the nauseous and foul smelling bridge cases we are called upon to remedy, that the porcelains are not subjected to the heat of the blow-pipe, that repairing a bridge of this description is a sinecure, in case of a broken porcelain, a very improbable thing, no breaks having occurred in any case, a new one can be cemented to place in the mouth and that economy of precious metal had been used.

After using the above system for nearly two years it seems the cleanest, most artistic, most economical and altogether the most satisfactory method the writer is acquainted with.

Filling the Anterior Teeth of Children with Tin.

BY H. L. AMBLER, D.D.S., M.D., CLEVELAND, OHIO.

FILLING the anterior teeth of children with tin, has been practiced by the writer more or less for thirty years, and he is convinced that such operations are practical and durable, and will last from five to twenty years, according to quality of tooth structure, size and location of cavity, care of the teeth, environment, and care with which the filling is inserted. In "Tin Foil and its Combinations for Filling Teeth," recently published by S. S. White, cases are recorded where tin fillings have lasted forty years.

Up to the age of fourteen we find many teeth which are imperfect in structure. In such cases we advise tin, for as the patient advances in years the tooth usually becomes better, so that if desirable the fillings can be removed, and saving operations made with gold. By treating cases in this manner very little, if any, tooth structure is lost.

In filling the anterior teeth, we suppose the cavities have been taken before they involve the incisive edge, but if the edge is involved the tin should only be rounded out, no attempt being made to restore a corner.

Tin has physical properties which render it desirable as a filling material ; it is about one-fourth as tenacious and malleable as gold. On account of its pliability it is easily adapted to the walls and margins, and a perfect fit is made, thus preventing capillary action and preventing further caries. Of all the metals used for filling, it is the best tooth-preserver and the most compatible with tooth-substance, and it does not change form after being packed into a cavity. Tin possesses antiseptic properties, which do not pertain to gold, for arresting caries in imperfect teeth, and owing to its therapeutic quality, and being a rather poor conductor, there is a strong probability of calcification taking place under it.

In a few cases tin does not discolor, in others it presents a grayish appearance, but in the majority it is more or less blackened on the surface, the metallic oxid penetrating the dentine slightly and acting as a protection, because it is insoluble, but in either event the tooth is preserved.

Many failures are made in filling the anterior teeth of children with cohesive gold, but if we work as carefully and try as faithfully with tin, good results would be produced and many teeth would be saved, and as tin can be cut easily, more cervical margins would be finished smoothly. For some time we have been using foil, prepared according to our suggestions, manufactured by S. S. White as a special product ; with it a filling can be made which is nearly twice as hard as the ordinary tin filling. This foil is more tenacious and cohesive than any we have ever seen. For eight months it has given complete satisfaction in the W. R. U. Dental College clinic, and in the technic work it has entirely superseded gold foil.

Good tin foil in proper condition is cohesive when force is

applied, and can be used for filling in the same manner in which cohesive gold is used, and a tin filling properly condensed, layer by layer, makes a solid mass which can be cut or filed. Cavities are generally prepared the same as for gold, then a strip or tape, narrower than the orifice, is folded once or twice at the end and placed where the filling is to be commenced, the tape being folded back and forth as the operation progresses by hand mallet or hand pressure; the finishing to be completed the same as for gold. For filling with a hand mallet, use instruments with medium serrations, and a steady medium blow with a four ounce mallet; in force of blow we are guided by thickness of tin, size of plugger, depth of serrations, strength of cavity walls and margins. The best results are only obtained by having absolute dryness.

A Method of Making Bicuspid and Molar Crowns.

BY DR. H. B. HINMAN, BUCYRUS, O.

I WAS asked to prepare a paper upon my method of making bicuspid and molar gold crowns. I claim no originality for my method, as doubtless many dentists prepare their crowns in exactly the same manner.

The making of crowns, since I first commenced the practice of dentistry, has been a sort of process of evolution with me—commencing with the die plate, next the Hollingsworth system, and finally the method which I am about to describe.

In both of the former methods, especially the first, I found it almost impossible to procure a correct occlusion, and it was also impossible to find any die plates which had sufficiently long and pointed cusps, in the upper bicuspids, to give anything like an artistic result.

The method which I employ at present, is as follows: I first prepare my band in the usual manner, fitting it to the root in the mouth, and giving it the necessary contour after the band has been trimmed down to the desired length.

I then take an impression with the band in position, by means of a small roll of modelling composition, pressing it up well on the band and adjacent teeth, and then instructing the patient to close the mouth and hold the teeth firmly together.

I usually cool the modelling compound by means of cold water inserted with the water syringe, and drawn out by the saliva ejecter placed between the cheek and the impression, the head being inclined toward the side. By cooling it in this manner, time is saved, and there is no liability of drawing the impression out of shape.

The double impression is now withdrawn, the band placed in the impression in position. Both sides of the impression are now poured up in plaster, and it is mounted on the crown articulator, or if the bite is peculiar, and it is desired to test the lateral movement, it may be mounted on the side of the Bonwill articulator.

After giving the plaster time to set, it is separated by immersing the whole in hot water, for a few moments, and then opening the articulator.

We now have a perfect model of the band in position and its relation to the opposing teeth. A little ball of base plate wax is then heated and pressed into the band, and the articulator closed, thus pressing the wax out of the center and showing how far up the cusps of the opposing teeth come.

The wax is then chilled and the cusps carved out, to match the cusps of the adjacent teeth.

Now separate your band with wax cusps from the model and press the cusps into Mellotte's Moldine, in the small tray that accompanies the Mellotte's outfit, first sprinkling the surface of the moldine with powdered soapstone. Put the rubber ring over the tray and pour up a die of Mellotte's metal, making the die quite heavy. Chill the die in cold water, dry it, and then smoke the surface of the die in the flame of a gas jet, or kerosene lamp. Insert it in the bottom of the ring and pour up a counter die of the same metal, care being taken to pour the metal at the lowest melting point. Pour only a little at a time, allowing it to set slightly before adding more, and after a few trials you will find little difficulty and will rarely melt them together. A much sharper cap can be swaged in this manner than where the die alone is made, and driven into a block of lead. Swage up your cap in the usual manner and solder to the band by means of 20 k. solder, the cusps being filled with 18 k.

This method requires considerably more time than the ordinary modes—usually about two hours for the whole operation, including polishing and setting the crown. The results obtained, however, amply repay any extra time and labor expended.

Cotton Polishing Cones.

BY D. V. BEACOCK, BROCKVILLE, CAN.

I HAVE often been annoyed when finishing a plate with plain teeth, to get anything that would polish between the teeth, but have found cotton batting polishing cones to be just the thing. They can be made as small as one may require, cost nothing, cut very rapidly, as they hold the pumice or other abrasive material in the fibers, and can be made to hand in a moment of time. All one has to do is take a bit of cotton batting, the size he requires the cone to be, hold it between the ends of the two forefingers and thumb against the point of screw or cone mandrel when running and it will be formed in an instant, then wet with polishing mixture and cut off the small end with scissors. I just happened to strike on it a short while since and was so pleased with it that I thought it might be of use to others. Whether it is new or not I can't say, but it is new to me.

An Interesting Case in Practice.

BY F. D. DAVIS, D.D.S., MINERVA, O.

IN April, 1897, J. W— called at my office to seek relief from pain in his face and jaw. In the battle of Perrysville, Ky., 1862, he was struck by a ball just below the right cheek bone. Patient stated that the wound discharged through the cheek for a while and then at the opening on the zygomatic surface of superior maxillary, but during the last ten years the discharge had been through the nose. His stomach eventually became weak, appetite failed and at the time of presentation there were signs of general poisoning and indications that the patient would not live much longer unless relief could be obtained. He complained of continued and severe pain in the face and jaw, and for years had not slept more than an hour at a time on account of pus accumulation and discharge from the nose. Several physicians had told him that the presence of polypi in the nose prevented him from breathing through that member, and advised their removal for relief. Exploring through a small opening at the zygomatic surface of the superior maxillary I could find no

necrosis but found some hard substance that indicated the presence of a foreign body in the antrum. The second superior bicuspid and first permanent molar were missing, and applying a local anesthetic I extracted the second molar to obtain adequate room for operation. With a trephine and excising forceps I cut away the process and attempted to remove the foreign body, but it would draw back each time. While it was in the antrum, it was not resting on the floor but seemed enveloped in a tough membrane. With a hooked instrument I finally succeeded in tearing away the body finding it surrounded by a tough and highly inflamed membrane covered with stringy mucus that looked like a false membrane. It proved to be a minie-ball encysted, a black substance about one-eighth of an inch in thickness, covering the ball.

The accompanying engraving shows the ball, actual size, as it appeared after removal.



The night after removal of the bullet the patient enjoyed the best night's rest he had had in ten years. He could breathe freely through the nose, and there was no after trouble.

The wound was washed out with peroxid of hydrogen and warm water and packed with iodoform gauze.

Borolyptol one part to three of water was used as a wash, a rubber plate was constructed to cover the roof of the mouth, attached by bands to the third molar and first bicuspid. This covered the parts and prevented ingress of foreign matter. The patient presented for a few weeks then treated the case himself. The wound healed rapidly and the patient gained twelve pounds the first two months.

He experienced no after trouble and is now a well and happy man.

The Proper Cleansing of Teeth.

BY S. D. POTTERF, D.D.S., DEFIANCE, OHIO.

SOME observations made on this very important subject during the sixteen years of my practice, convinces me that dentists generally do not give this subject the attention it deserves, and

do not insist on and emphasize the importance of the thorough and regular cleansing of the teeth: and many of the profession give their patients very little indeed if any instruction at all in regard to the manner and time of day that this cleansing should be most carefully and thoroughly done.

I venture to say teeth would be saved longer and mouths made healthier generally if people attended better to the proper and regular cleansing of the teeth than now, as most people having frequent filling done neglect such cleansing.

I am surprised at the

ADVICE SOME DENTISTS GIVE THEIR PATIENTS

on this subject. Some three years ago I had la grippe nearly all winter, and it became necessary that I get out of the office for awhile, and I planned a trip to the Pacific coast, and for an excuse to call on the dentists as I went along, for I feel more at home among dentists than any other people in the world, I took with me a line of dental specialties. I made a trip of about seven thousand miles, calling on the profession in all the towns and cities of any note. I made a business of keeping my eyes and ears open to see what advantage, if any, others in the profession had over me in some of the operations in which I was most interested, and getting all the good things generally that I could, as I came in contact with some of the best men in the profession. Among other things I endeavored to get all the ideas I could on the subject of cleansing of the teeth and gums. A few gave good advice, but many, otherwise good dentists, gave very little instruction in regard to cleansing of teeth. One man, an able dentist, in a town of fifteen or twenty thousand inhabitants, was advising a young lady patient, who had asked him what she could do to keep her teeth properly cleansed, and what she should use, the doctor said to her, just a little common table salt; it's one of the best things in the world to clean your teeth and keep your gums healthy, in fact it's the only tooth powder I advise. Shame on such inexcusable ignorance or willful carelessness. Fancy a woman (or any one) trying to wash a greasy dish with a little common table salt and water.

I met dentists using corundum stones and sand paper discs and strips to remove green stain and other discolorations from the teeth. For my life I cannot see any excuse for such practice.

METHOD OF REMOVING DEPOSITS AND STAINS FROM THE TEETH.

My plan is to take a pledget of absorbent cotton, saturate it with alcohol and go over the teeth, cutting all fats and removing starchy foods. Then with a little cotton saturated with a 3 per cent. solution of pyrozone; then with rubber cups or moosehide discs, or whatever I may want to use, dipped into pyrozone and pumice. After removing all traces of lime deposits, I polish off stains; if there are any that do not yield readily to this treatment, I touch such stains with compound tincture of iodine, and endeavor to polish off as before; if this does not remove them, I touch stains with 10 per cent. solution of trichloroacetic acid, this usually removes all traces of stain; I then finish with chalk and pyrozone.

AS TO THE TREATMENT OF GUMS,

such as pockets or any inflammatory condition caused by the lime deposits, etc., I treat with a 3 per cent. solution of pyrozone and stimulate with about 20 per cent. solution of trichloroacetic acid, and direct patient to brush teeth and gums carefully after each meal and just before retiring at night, with alcohol and rose water equal parts, eight or ten drops on a damp brush, keeping this up until gums are healed. If any pockets do not readily yield to this treatment, I touch them with iodide of zinc, which usually stimulates them into healthy granulation.

THE COMPOSITION OF COMMERCIAL DENTIFRICES.

I am asked, as you all are, many times, "Doctor, what preparation is best to use to clean my teeth?" Gentlemen, what do you tell them? What shall we advise? There are a thousand and one things on the market that people buy and use, that are simply worthless; do no good at all, just made to sell, flavored up pleasing to the taste, and the facts are the bottle, label and flavor is all there is of it so far as the expense goes to the manufacture of most of these nostrums called dentifrices, and placed in drug stores for sale.

There is a well known firm in Detroit whose main business is to manufacture patent medicines, dentifrices, breath-tablets, perfumes, etc. If you want a quantity and send a formula they say they can make it for you cheaper than you can make it your-

self. I had a talk with the manager of this institution, as I was his dentist while I practiced in Detroit, and he told me that the quality of materials called for in most of the dentifrice formulas was rotten cheap stuff; substituting whiting for prepared chalk, and Indian meal for orris root, and cheapest article of soap, such as no one would want to use in washing his hands or feet if he knew what it was.

This, brother dentists, is what nine tenths of our patients are using to cleanse their teeth and mouths, and I am not sure but some dentists advise their patients to and use this same stuff themselves.

A GOOD DENTIFRICE.

My idea as to the requisites of a good dentifrice for general use are an astringent, stimulant, antacid, antiseptic, and something to cut fats and polish surfaces of teeth; no soap, no cuttlefish bone, no charcoal, no pumicestone need apply, as these are too harsh, and soap, as a rule, is made of impure fats and no one should use it in his mouth.

I prefer a mixture of liquid and powder together, powder consisting of equal parts of pulverized orris root and prepared chalk, and the liquid the following formula:

Alcohol	-	-	-	-	-	-	-	oii.
Aqua Distill	-	-	-	-	-	-	-	oii.
Listerin	-	-	-	-	-	-	-	oz. viii.
Glycerin	-	-	-	-	-	-	-	oz. viii.
Tinct. Myrrh	-	-	-	-	-	-	-	oz. iv.
Oil Wintergreen	-	-	-	-	-	-	-	3 vi.

Use a large mortar, one large enough to hold the amount of liquid; put in oz. ss magnesia, rub fine: add the oil, whatever you flavor with; after rubbing magnesia and oil together, add liquid; after stirring together, filter well; your liquid should come out perfectly clear. If then I want to color the preparation, as most dentifrices are colored more or less I add oz. ii. of amoniactal solution of carmine; then put in as much powder as desired in each bottle and fill up with the liquid; shake well together; shake before using.

WHEN TO CLEAN THE TEETH.

The time of day when the teeth should be most thoroughly cleansed: If the teeth are to get but one thorough cleansing

during the day, just before retiring is the best time to give it to them, as there are six or eight hours during sleep that the salivary glands are inactive, and fatty and starchy foods that may be lodged between and around the teeth are bathed in saliva, a partial digestive fluid, undergoes decomposition, forming acids which act more or less readily on the tooth structure at time of its formation; the salivary glands not active during sleep, acids are not diluted, as during day a free flow of saliva prevents to a great degree the deleterious effects of acids thus formed.

I think the teeth and gums should be carefully brushed after each meal with a medium soft brush, using as a wash, on damp brush, alcohol, rose water and listerin, equal parts; the mixture above to be used once a day, just before retiring.

Pain.

BY E. H. RAFFENSPERGER, D.D.S., MARION, O.

SOME medical writer has given as a definition of pain—"An unpleasant sensation that cannot be described." This comes as near to the truth as anything. The term, pain, comes from the French, painer, torture.

Dentists are brought face to face with this bugbear every day, and, owing to this fact, I have selected it for my subject and will endeavor to show up some peculiar conditions, but will not attempt to explain what pain really is, as I hardly feel myself capable of the task.

Pain may be real or imaginary, yet the results will be the same. Some individuals are so constituted that they are able to stand the maximum amount of pain without any apparent inconvenience or suffering. The same degree of pain being experienced by others might produce such a shock that would prove fatal.

Whether these persons are really insensible to pain, or possess the faculty of bearing it without outward evidence, is not understood.

Among the lower order of the human family these blunted sensibilities are especially noticeable, and all manner of torture that these beings can invent or think of, is practiced upon others,

and in almost every case the unhappy victim evinces no evidence that he is suffering and maintains his stoical and defiant manner until death releases him.

It is said that during the period of the world's history, when it was the fad to burn people at the stake, for being too pronounced in their religious views, these unfortunate creatures would go to the stake singing, realizing fully their fate, and would continue until partially consumed by the flames, not a murmur or groan escaping them. In the lower order of animals this power to withstand pain is also found, especially in the insect tribe. We have all seen a beetle or butterfly with a pin thrust through its body, go about its business as though nothing was the matter.

On the other hand imaginary pain, numerous cases are on record where people had experienced all the suffering incident to a painful occurrence, when in reality nothing was wrong with them. I recall the case of a married man, who, when his wife was confined, suffered all the aches, pains and troubles common to this interesting occasion. Another case which is familiar to most of us, illustrates the power of the imagination, occurred in France. A condemned criminal was told he was to be bled to death, was then strapped to a table and blindfolded, and a blunt instrument passed over his arm, at the same time a stream of warm water was so arranged that it would fall on his arm, thence into a vessel on the floor, producing a sensation similar to that of blood dropping. All the symptoms of bleeding to death were shown by this man, and after growing gradually weaker and weaker he died, not having lost a drop of blood.

That the mind has a decided influence over the body cannot be truthfully denied, and many people have the necessary will power to withstand almost any degree of pain. This power can be cultivated or educated to a wonderful degree.

There is a sect quite common now, called "Christian Scientists." These people believe that all the ills flesh is heir to are simply "beliefs," and can be "thrown off" if the patient so wills, and faithfully believes that nothing is the matter. The people are not all "cranks" by any means. Some highly educated and unusually sensible people are found in their ranks. One case that came under my observation was especially interesting. A lady for whom it was my pleasure (for we all fully appreciate the

pleasure of operation over a highly nervous individual) to do some filling a few years ago, was at the time very nervous and excitable, could hardly endure the process of drilling, though most of the cavities were small and not generally considered painful. I managed to get through with her, much to the relief of all concerned. A few months later she became connected with the Christian Scientists, and a few weeks ago called again to see me. This time several more teeth needed attention, all of them worse than the teeth she had had filled at the former visit. Remembering my former experience with her, I was agreeably surprised to find the patient paid no attention to the drill, and one cavity which I was positive encroached nearly into the nerve and in any case would have been especially painful, she calmly declared did not "hurt one bit," nor could I discover by any sign the slightest show of pain, and we all know that the eyes will often betray the feelings, but not so in this case. I was positive the nerve was alive and healthy, but the lady said it was not in the least sensitive to either the drill or hot or cold water, so taking her word for it I filled the tooth and dismissed her. Several days later she returned with a beautiful case of periodontitis, tooth loose, and quite a swelling on the jaw, but she smilingly told me there was not or had been the slightest pain. Percussion brought no response, and the only reason she came back was, she "did not like the looks of the swelling on the jaw." It is needless to say that a case of this kind approaches as near to the "torture of the damned" as can be, yet this lady solemnly declared that there had not been the slightest evidence of pain. Was this simply a case of feminine obstinacy, or had she really acquired the power of "throwing off" the "belief?" If the latter is correct, there must be something in Christian Science, and I will cheerfully recommend it to all needing the services of a dentist. What a boon it will be to us all!

Some dentists have the reputation of being hard hearted and are often accused of inflicting unnecessary pain, while others have made a reputation of being kind and sympathetic. There is no doubt that the latter are more popular than the former. Our profession is one of somewhat painful necessities, but we owe it to our patients to be as gentle and sympathetic as possible under the circumstances. If we can convince our patients that we will inflict only the minimum amount of pain necessary, it will go a

long way towards mitigating the torture one generally undergoes in the dental chair. So many patients say the actual pain is not half so bad as the thoughts of it. Simply to hear the expressions of the laity ought to be a lesson to us, but not until our patients become Christian Scientists, or we hypnotists, will the dental chair be robbed of its horrors.

ALL SORTS.

A Difficult Case.

The root presented was that of a left superior second bicuspid wholly overgrown with gum tissue, leaving its probable size and outline a mere matter of conjecture. Noticing that the root was bounded anteriorly by a nicely adjusted gold crown, I suggested crowning for the case in hand provided the root should be found suitable, but was met with the reply that when the crown on the first bicuspid was set, and while some portion of the second bicuspid was still visible, the dentist in whose hands the patron then was deemed it an unfit subject for such work.

Pleased, however, with the possibility of securing an additional tooth, the lady consented to my proceeding in the effort.

With a lancet I excised the gum over the end of the root, and, touching the wound with trichloroacetic acid to check the flow of blood, I was gratified to find a root that, though deep-seated, was in a comparatively healthy condition. After having cleaned the root and canal as thoroughly as possible, I inserted in the canal a very small wood-screw, around which I tightly packed warm gutta-percha, leaving it flush enough that the lower teeth just touched it when the teeth were articulated, and extending the gutta-percha to the bicuspid crown and the first molar, its posterior neighbor. Having smoothed the gutta-percha with chloroform, the patient was provided with a supply of borolyptol, with which to keep the parts aseptic, and an hour appointed for the fifth day following.

At the second sitting the gutta-percha about the head of the screw was removed and the screw taken out. The opening thus remaining was enlarged until the greater portion of the root-end was exposed and through this opening the root was treated and filled. Now, removing all the gutta-percha, the root was found to be nicely exposed, and after trimming the edge with finishing burs, an impression was taken in plaster forced to place by a previously arranged impression in wax. Finding the root so small, and finding that the crown would of necessity be so long as to

preclude the possibility of it being properly shaped, it was decided to enlarge and extend the root with a band of gold, 30 gauge, which was done as follows: Drying the plaster impression and oiling with glycerin, a stick of "American Express red wax" was warmed at its pointed end and forced into the impression, resulting in an excellent model of the root-end, about which the band was formed. Trying the band on the root and finding the fit good, it was removed with the pliers, and after heating was imbedded in the side of the stick of wax as deeply as it was intended to encircle the root.

The task of shaping the top of band and arranging a cap for the root to slip inside the band was now an easy matter. Having done this, the band was removed from the wax, and after cleansing it was replaced on the root, together with the cap, which was perforated to admit a dowel. Sealing the parts together with wax, they were removed, imbedded in sand and plaster and soldered. After polishing, the extension was set upon the root with cement, leaving the exposed edge of the band over which to construct a gold crown, which was done in the usual manner. This piece of work, after five months' service, gives promise of a long period of usefulness.—T. J. MASON, in *Ind. Jour.*

To Remove Enamel Previous to Crowning.

Take a molar or bicuspid, for example, which is to be prepared for an all-gold shell crown. Where spacing will be required between the tooth to be crowned and the adjoining tooth, it can be more easily accomplished with vulcan disks, which are thin, strong, flexible and cut rapidly. Care should always be used not to cut the opposite tooth, which can easily be avoided by using pressure towards the tooth to be prepared. By the time sufficient space has been obtained these two sides, the anterior and posterior approximal, have generally been squared up very well, as these thin disks will easily pass down below the festoon of gum and remove all the enamel.

The buccal and lingual sides and the approximo-buccal and approximo-lingual corners is generally where the difficulty arises.

The buccal and lingual sides down to within a few lines of the gingival margin may be easily and rapidly cut away with small carborundum wheels, which now leaves the crown of the tooth above the neck in a square shape. The disk has flattened it on the approximal sides, and the small wheels on the buccal and lingual sides. By taking small, thin, double convex carborundum wheels these corners may be cut down until the tooth takes a proper shape and all the enamel is removed, except a

little ring around the neck of the tooth, which generally extends up just beneath the gum margin. To remove this little ring of enamel there is nothing so effectual as the vulcan cups or concavo-convex wheels. The thin edge of these little vulcan cup wheels will pass easily down below the margin of the gum without scarcely wounding it and cut off all the irregularities and excrescences. The range of work which these little wheels will do is remarkable, and they are hard and tough and do not wear easily. After cutting and leveling down the bumps, the surfaces of the crown should be planed off smooth by using scalers made very hard and sharp. For this purpose the ordinary diamond-pointed, double-edged scalers are best.

By placing the thumb on the crown of the tooth and grasping the scaler firmly in the fingers, commencing at the gum line and pulling downward towards the cutting edge, the surfaces can be effectually planed off and rendered perfectly smooth. If any enamel should have been left by the wheels it can be easily removed with the scalers in this way.

As these scalers come from the manufacturers they are too soft for the purposes suggested above, and must be hardened. This can easily be done by heating the point to a white heat and plunging in cold water or oil. Some claim that mercury is still better. After treating them in this way you have an instrument that will cut enamel, or even glass if required.

In those cases of leaning third molars, which have tipped forward on account of the loss of the molars in front, these little cup-shaped vulcan wheels are indispensable for reaching the anterior surface.—H. H. JOHNSON, in *Dental Weekly*.

Inter-Alveolar Administration of Eucaine.

My best results in the administration of eucaine has been when injection has been made into the alveolar process. By this means it appears that the solution reaches the pericemental membrane better than when injected into the gums.

As an ordinary sized hypodermic needle is too frail for this operation (its point becomes blunted and bent, even if the stem does not break) recourse is had to the larger sized needle used by veterinary surgeons which, when cut off at, say a quarter of an inch from the reinforcement portion of the needle, is strong enough to penetrate the outer wall of the alveolar process.

But as the piercing of the gum by a needle of this size is itself rather painful, the writer first injects the gum with a fine needle in the old-fashioned way, at about an eighth of an inch from the gingival margin.

The preliminary injection not only prepares the way for the more severe one, but also for the lancing, which is painful when injection is made only into the alveolus.

The penetration of the alveolar process is usually made at about a quarter of an inch from the gum margin, and on both sides of the tooth; the palatal side being perhaps the better. Where there is chronic abscess present, the syringe point is, if possible, driven into it.

I have noticed no bad results from this practice during the three or four months of its employment. The dosage generally used, is about fifteen to twenty drops of a five per cent. solution. This dose has never in my hands, during nearly a year's use of it, caused the slightest systemic effect, not even a brief giddiness, whereas the drops of a two per cent. solution of cocain frequently caused trouble in previous years.—S. S. SPENCE, in *Items of Interest*.

How to Prepare Solutions of Pyrozone.

To prepare a fifty-per-cent. solution, it will be found most satisfactory to employ glycerin as the solvent. One tube of pyrozone, twenty-five-per-cent. solution, should be poured on fifteen minims of glycerin and allowed to stand in an open dish until the ether has evaporated. The glycerin will then contain fifty per cent. of H_2O_2 . The uses of a solution of this strength will readily suggest themselves to the practitioner. Aqueous solutions of twenty-five-per-cent. strength can be readily prepared by shaking the contents of a tube of twenty-five-per-cent. solution with a half drachm distilled water and separating the mixture through a funnel, or, better, by means of a pipette drawing off, the ether floating on the top. The lower layer will contain the H_2O_2 in aqueous solution. Pyrozone, five-per-cent. solution ethereal, can be prepared by adding the contents of one tube of pyrozone, twenty-five-per-cent. solution ethereal, to half a fluidounce of pure sulphuric ether.—G. S. ALLAN, in *International*.

About Bleaching Teeth.

Many use a twenty-five per cent. ethereal solution and some a five-per-cent. for this purpose. Others still claim they obtain a more prompt and effective action by means of the electric (cataphoric) current. So far as I can see, there is nothing gained by using the cataphoric current for bleaching purposes. There is no advantage in using the twenty-five-per-cent. solution of hydrogen dioxide, and I always employ the five-per-

cent. solution. If a five-per-cent. solution is used the evaporation soon reduces it to a twenty-five-per cent. solution, and by repeatedly swabbing out the cavity the desired change in color can be quickly obtained. I do not know that I have ever failed in my effort to bring a discolored tooth back to its normal color. It is well to be cautious and stop a little short of the full measure of success. Then seal a small portion of the five-per-cent. solution in the tooth for a day, and usually no further treatment will be required. Bleaching can be, and often is, overdone.—G. S. ALLAN, in *International Dental Journal*.

How to Make Temporary Stopping.

R	White wax	-	-	-	-	-	1 dwt. (full.)
	Red gutta-percha base-plate	-	-	-	-	-	4 dwt.
	Precipitated chalk	-	-	-	-	-	4 dwt.

In a small porcelain-covered iron ladle melt the wax. When melted add to it the gutta-percha base-plate, cut into small pieces; this must be carefully and thoroughly melted into a smooth, thick paste; then add the chalk and work all together by means of a pestle.

When mixed take a convenient sized portion, not too hot, and roll it into a ball between the palms of the hands; then placing the ball upon a smooth surface, as a porcelain slab or sheet of pasteboard, roll it gently into a stick by the fingers of an open hand; smoothly rounding the stick by rolling it with a flat piece of wood or plate of glass.

I would add that the admixture of salt is, with a little practice, a very easy task, but that the thorough working of the warm mass in the ladle with the pestle is very important, as upon this depends entirely the toughness, homogeneity and excellence of the temporary stopping.—J. FOSTER FLAGG, in *Dental Weekly*.

Some Hints on Crown- and Bridge-Work.

In a paper on Prosthetic Dentistry read at the Southern meeting, Dr. C. L. Alexander emphasized the point that hygienic relations must be borne in mind as well as esthetic appearance. As preliminary to "crown and bridge-work" the gums must be restored to health, pulpless teeth treated and all cavities filled. When shell crowns are placed, there should be a perfect fit, extending well down under the gum margin, excluding the possibility of further decay. If porcelain facings are to be used, a band is not necessary; a ferrule can be formed by burnishing gold plate down over the root, which, when united to the crown proper,

makes a very strong attachment. Cast abutments instead of open-face band attachments obviate a vulgar display of gold. Many failures and much clumsiness is due to having the gold for bands and caps too thick. For bands, Dr. Alexander uses coin gold rolled to 31 American standard gauge—backing and cusps should be made of 24-k. gold rolled very thin, say 38 gauge. For cast fillings and cast abutments for bridges use 24-k. gold rolled very thin, say 38 gauge, using 46 for the base and 38 for covering the wax contour. Never lose sight of the fact that the typical self-cleaning space will be appreciated by your patients from a hygienic standpoint and will add to the durability of the work.—*Dental Weekly*.

Where to Obtain Fine Platinum Wire.

Very many requests have come to me for information as to where fine platinum wire could be obtained, suitable for the flexible cathode for cataphoresis. I do not know of a place in the country that keeps it fine enough for our purpose, except what I have had made. The Cogswell Dental Company, of Cleveland, have arranged to make and supply the electrodes to the profession, all ready to make connections with any cord tips, at a very low cost. Reels that will run the six foot cords in out of the way by touching a spring, such as I have had made for my use, can be had of the firm of Drake & Mills Co., Cleveland. They are a great convenience.—W. A. PRICE.

Root Canal Treatment.

In cases where crowns are not to be set, my usual method of procedure is as follows: Open up canal, flood the canal with peroxid of hydrogen or etherial solution of pyrozone. Let this remain for one minute or, if bubbles are given off, until they cease. Dry, and flood with absolute alcohol. Leave this for thirty seconds, and then dry again, this time very thoroughly, with some form of root canal dryer. Then swab out with the following:

Canada balsam dissolved in spirits of turpentine, to which is added ten per cent. of a saturated solution of hydronaphthol in chloroform.

Leave the canal flooded with this and insert a gutta-percha cone large enough to fill the canal and force it firmly to place. The absolute alcohol absorbs the moisture from the dentin very rapidly, and this, with the action of the heated root dryer leaves the dentin in a condition in which the balsam will penetrate to a considerable depth. The forcing

home of the gutta-percha cone also tends to assist this action. This in my hands has proved to be the most simple and satisfactory method of treating pulp canals, and the entire operation does not require much more time than I have taken to describe it. Of course, if there is any complication outside the end of the root, ordinary methods of treatment for such cases must be adopted.—J. LEON WILLIAMS, *Items*.

How to Clean Hypodermic Needles.

When the hypodermic needle becomes plugged up by a particle of rust, or any substance whatsoever, and which cannot be removed by the little wire that accompanies every syringe, fill the syringe with water, screw on the needle, press down upon the obstacle by piston rod, then hold the needle at the point of obstruction in the flame of an alcohol lamp (or any lamp, as to that matter), and the steam produced thereby will expel the obstructing substance at once.

This does not materially injure the needle, as I have used them for months afterward. It is only necessary to hold the needle in the flame but a moment, and then by expelling water immediately the needle is cooled.

By this simple procedure many an old needle long thrown aside may again be brought into use, and the price of many needles saved again in the course of a physician's experience.—R. L. BARNUM in *Atlanta Med. Jour.*

Should any Portion of Dentin that has been Softened by the Action of Bacterial Acids be Left in a Cavity Prepared for Filling?

This is a question that can hardly be answered offhand, or without the use of several ifs and buts. If there has been no inflammation or but slight inflammation of the pulp I think it is perfectly safe to leave a layer of partially softened dentin over the pulp *providing the proper treatment of this softened dentin has been carried out*. And this is my idea of the proper treatment in such cases.

Remove the softer portions of dentin and place a pledget of cotton wool saturated with absolute alcohol in the cavity. Leave this for one minute, then remove, dry the cavity, and flood it with oil of cloves which also leave for one minute. Any one accustomed to histological work will see the *rationale* of this treatment at a glance. Oil of cloves is known to the histologist as one of the most powerful *clearing* agents known, i. e., it

has the property of very rapidly penetrating any tissue, even bone and dentin, that has previously been treated with strong alcohol. It is a sufficiently good germicide for the purpose and it seems also to have a medicinal effect of value in slight congestion of the pulp. Used as above described, it will penetrate a considerable thickness of dentin and thus search out and destroy or render inert any forms of bacteria that may have penetrated beyond the point where you have cut. Dry out the excess of oil of cloves and varnish the bottom of the cavity with Canada balsam dissolved in chloroform to which has been added ten per cent. of the solution of hydronaphthol in chloroform previously spoken of. For this use, the balsam is dissolved in chloroform instead of turpentine, because here we wish it to dry rapidly, while in the treatment of the root canal we do not wish it to dry rapidly. Partially dry the layer of varnish in the bottom of the cavity with hot air and then apply to the floor of the cavity a piece of thick asbestos paper cut the proper size and shape. The partially dried varnish will hold the asbestos paper firmly in place. Now line the cavity with quick setting Dirigo antiseptic cement and fill with gold or amalgam. Such treatment will leave the tooth reasonably free from sensitiveness to thermal change even when the pulp is nearly exposed.—J. LEON WILLIAMS, *Items*.

Prosthetic Dentistry.

Dr. H. A. Smith read the following before the Isaac Knapp Dental Coterie, Fort Wayne:

The subject for the evening, prosthetic dentistry, suggests the oft-repeated remark by dentists, "There is nothing in the practice of prosthetic dentistry." Unfortunately, it is true that the dentist does not, as a rule, receive just compensation for his efforts in this department of practice.

Inquiry as to the cause of this condition of things suggests, first, that a uniform fee for "sets of teeth" of the same kind, as is the practice of many dentists, is unreasonable, not businesslike, and a positive injury, not only to the individual practitioner, but to the profession generally. A fixed fee for this service implies that a set of artificial teeth is a product that can be turned out in a given time and at a uniform cost. The truth is, however, that every set of teeth, especially a full denture, is more or less an experiment. There is, in the first place, the element of uncertainty as to adaptation. Next, the idiosyncrasy of the patient must be taken into account, and then the sisters and the cousins and the aunts frequently have to be considered. Every experienced dentist

knows that it is often worth two or three times as much in money to make similar dentures for two different patients. Time and skill are the elements that enter into the value of productions of this character, and they should be paid for in proportion to their expenditure.

Second, Is it in accordance with correct business methods to always charge the rich and poor alike? The inability of a class to pay for our services may be in a measure compensated for by asking an increased fee from the well-to-do class. This is the custom usually followed in medicine and surgery and in the law. Even the minister expects a larger contribution from the rich member of his church than from the poor members, although the spiritual welfare of the rich and poor are of equal importance.

The immediate effect of the adoption of a gradation in fees in prosthetic work would be to bring up the quality of these operations. Opulent patients would receive our best efforts—that is, good working dentures in combination with the essential artistic features, while those less favored with worldly goods would get from our hands good, practical work, with the artistic element not wholly left out, as now frequently is the case.

In order that the practice of prosthetic dentistry may be made compensating, both the dentist and his patient should be brought to realize fully the old familiar truth, "The laborer is worthy of his hire."—*Indiana Dental Journal*.

Dental Journals and Dental Societies as Educators.

Dr. S. B. Palmer, in a letter to the *Indiana Dental Journal*, says:

"In 1849, when I began the study of dentistry, there were no dental laws, no transgressors, and dental knowledge was, with few exceptions, obtained from a preceptor in office practice. When I commenced practice I entered the great 'school of dentistry.' Dental journals were the text-books, dental society meetings were the lecture courses. I am still a member of the school and I have not been measured for a graduating suit, either.

But the same principles operate now as then for success. Then there were limited means for obtaining knowledge, but less competition than now. By energy and perseverance, some went to the top. Today all have an education by law, but, in spite of the fact of equal educational advantages, some will get to the top and others linger behind. Energy and a desire to be in the front rank are prerequisites to success, and the means to be employed are simple. Become a member, and a working member, of dental societies, and read dental literature to keep abreast of

the times. * * * * In short, dental societies are the degrees one must take to be known outside of practice. In societies there is always work to be done for those who can do it, and in the doing comes promotion. What I am I owe to dental literature and dental societies."

Quick Process for Nickel Plating.

There is no reliable method of depositing nickel from its cold solution, but a thin and adhesive coating may be given articles of brass, iron, etc., according to the Standard Formulary, by the following process: Boil in a copper vessel a saturated solution of zinc chloride and an equal quantity of water. While boiling add hydrochloric acid, drop by drop, until the precipitate at first thrown down is redissolved. Now add zinc in powder, until the bottom of the kettle is nearly covered with a precipitate of zinc. The bath is now ready for the addition of a salt of nickel, and you may use either the sulphate or the nitrate. Add it in sufficient quantity to give the bath a strong green color. The articles to be nickered are now hung in the bath by means of a zinc wire, or a strip of sheet zinc, and a few pieces of the latter are thrown in along with them. Raise the heat to a strong boil and continue it for several minutes, or until the articles are covered with a bright coating of nickel. The articles should be thoroughly cleaned and free from grease before being put in the bath.—*American Druggist*.

Peculiarities of the Left Side of the Jaw.

In answer to the questions asked by Dr. Haskell in an article in the *Ohio Journal*, Dr. D. D. Atkinson, in the *American Dental Weekly*, says:

"This is a condition I have not before taken into consideration, but granting its verity, I shall venture something "tangible" for the doctor. It is a well known principle in physiology that use strengthens any organ or part of the animal economy. The right arm is brought into play on all occasions where strength or skill is required; the right leg is called into play if either must be used in an extraordinary effort, as in kicking; consequently the muscles of the right side grow stronger than do those of the left. The miller carries the sack of grain on the right shoulder all because of the better development of the muscles on this side. It can therefore not be surprising to find people masticating food on the right side more than on the left. Then, it must follow that the teeth, being used most on that side, will be more firm, that the bone in which they are set will become more dense, than where it is less used,

and consequently will not be absorbed to as great an extent when the teeth are extracted; and in proportion as the alveolus of the left side is less dense than that of the right, will the absorption be greater and the depression greater.

It is also a fact that teeth constantly used in mastication will not suffer from caries as do those which are not. Any operator can tell at a glance which side a person masticates on, from the healthy appearance of the teeth on that side, and this is particularly the case with persons who do not give their teeth the proper care.

I think the question of use and disuse will answer the five conditions named by Dr. Haskell, yet it is not the purpose of this article to treat of all of them in detail."

A Hygienic and Esthetic Crown.

At the St. Augustine meeting Dr. W. W. Walker described the following method of mounting a Logan crown, the result being satisfactory in every sense—hygienic, esthetic, easy to adjust, and with the least discomfort to the patient:

The end of the root is to be squared off and beveled a little beneath the gum at the labial aspect. The canal is reamed and a Logan crown selected with a periphery corresponding with that of the root. The crown is ground to a fair joint at the labial margin, and beveled upward to the lingual surface so as to leave a space of about the sixteenth of an inch between the porcelain and the root, of which the apex is toward the labial aspect of the tooth. A circular groove is next cut in the end of the root between the canal and the periphery, in which is fitted a band of 22 k. 28 gauge gold, made wide enough to project sufficiently from the groove to afford a good hold for removal. The band in position in the groove is scratch-marked all around at the level of the root end, and ground down even with the mark except at one or two points where tongues are left by which to remove the band from the groove. The band is then removed, the tongues ground off, and the band turned down on a thin piece of gold or platinum laid in the palm of the hand, which, if well annealed, will adapt itself closely to the ground edge of the band when the latter is ground down upon it. The plate with band in position is then grasped with a delicate pair of tweezers, and with the addition of a little flux, solder and flame, the two are made one. The plate is then trimmed approximately to the size of the root, placed in position with the band entering the groove and the plate burnished to the face of the root, outlining the periphery and the mouth of the root-canal. The piece is again removed and the plate trimmed to the size

and shape of the root periphery, as indicated by the burnishing, and a hole punched or drilled to admit the pin of the Logan crown previously prepared as described. A piece of 24 k. gold is next perforated for the passage of the Logan pin, and adapted closely to the beveled base of the porcelain. The pin is then surrounded by a mass of Parr's flux wax, the plate with the band placed on the root and reburnished, and warmed by throwing a current of hot air on it. The porcelain with its gold plate in position, is next warmed and placed upon the root, the warmth causing the flux wax which now fills the wedge-shaped space to adhere to both plates so that when cooled all will come away together. When cool remove, trim away all surplus wax and invest, for which purpose Brown's "Investment Fiber" serves admirably. When mixed with alcohol, the latter can be ignited, drying out the investment while you get the solder ready. Removing the wax, 18 or 20 k. gold is then flowed into the space between the two surfaces of gold. Polish the exposed surface of gold and set to place with cement or gutta-percha as preferred. This crown offers the advantage of a band for strength, but obviates the adaptation of a band to the outside of the root, the fitting of which is so difficult, disagreeable and even sometimes painful to the patient; the band is out of sight (no slang intended) and cannot irritate the tissues or cause recession of the gums.

This crown combines the features of the inner band described by Dr. H. F. Maasch in 1888, the wedge-shaped section of gold used by Dr. Gordon White in mounting the Logan crown, with some features of the Hollingsworth method. But we were told many years ago that "there is nothing new under the sun." Its advantages are that it is hygienic, esthetic, strong and easy to construct and to adjust, giving the minimum amount of discomfort to the patient.—*American Dental Weekly*;

Volasem, an Antidote to Cocaine.

I was one of the first to employ cocaine as a local anæsthetic, and the first, I believe, in oral use. (*See Independent Practitioner*, 1885.)

I have had a varied experience with it. The cases of cocaine poisoning I have had to treat are numerous, and many an unhappy hour have I spent in restoring my patients. Continually searching for a drug that would antidote it, I have finally found one in volasem. For over two years I have in all cases used this drug, giving it immediately before the administration of cocaine, in doses of one to two drops in a little water, and it is more rare for me to see an untoward symptom of the toxic effect of cocaine, than it was not to see it in previous practice. I used it then

as I do now, by application and by hypodermic injections, but was very guarded as to the quantity used. Now, I use it unhesitatingly for any and all my patients, and in unlimited quantity to produce the desired result, in strength of four per cent. to a saturated solution. I feel that I can most heartily recommend this antidote to you. In case your druggist cannot supply it, it can be procured from Kellogg & Co., Fifty-eighth street and Sixth avenue, New York City.

I consider cocaine a dangerous drug in the hands of the unskilled without a reliable antedote, and even then, as with all other drugs, he should have a knowledge of how to meet conditions as they arise. The poisonous symptoms of this drug are variable. While most patients are affected alike, many develop odd symptoms. Meet the symptoms as they arise and endeavor to keep the patient in a normal condition. Cardiac and respiratory stimulants are the most necessary. I chiefly use the following: Tinct. Digitalis gtt 5—10. Spts. Frumenti $\frac{3}{4}$ ss to $\frac{5}{8}$ ii. Strychnia Sulp. grs. 1-60 to 1-30.

Where it is necessary to use these do not depend upon them alone, but loosen the clothing of your patient, wrap warmly, apply hot water bottles, working to establish the circulation and respiration, employing the reclining or sitting posture as the case requires.—*G. Lenox Curtis, Items.*

The Prostitution and Abasement of Dental Practice.

In a paper read at the Southern Dental Society meeting Dr. W. W. H. Thackston says, (*Dental Weekly*) that the remedy for prostitution and abasement of dental practice lies within the control of our college faculties. Let the colleges be cautious and circumspect in matriculating students; let not one be graduated who does not give reasonable promise of a professional career unstained by dishonor or by moral or professional obliquity. As a rule our college faculties are composed of gentlemen of acute and clear perceptions; they are good judges of human character, and their opportunities for observation are ample for forming an estimate of character, as well as of qualifications for practice. Let it be made a requirement that every aspirant for a diploma should, before receiving the same, sign a pledge, to be attested by the dean or president and filed in the archives of the school, that he will faithfully observe and honor the "Code of Ethics" adopted by the National Dental Association and by all reputable schools, and that in default thereof he shall surrender his diploma to the school from which it was received, and have his degree revoked by publication in the annual announcements of his alma mater and in the secular press of his place of residence.

Pulp Capping Material.

In the discussion on Operative Dentistry, at the St. Augustine meeting, Dr. L. G. Noel (Nashville, Tenn.) recommended the use of a hydnaphthol cement filling over a traumatically exposed pulp, in cases where there has been no peridental inflammation. The filling consists of one-third hydnaphthol powder to two-thirds of the powder of any good cement, mixed and used as usual, with cement fillings. This filling may also be used in cases of peridental inflammation, which yields within thirty-six to forty-eight hours to treatment with pure beech-wood creosote. He used the creosote quite liberally, first saturating the cavity walls and then sealing it in the cavity, on spunk or cotton, from one sitting to another. If the inflammation does not yield within forty-eight hours, arsenic is the only remedy.—*Dental Weekly*.

Facts Worth Remembering About Hand-Pieces.

The mechanism of hand-pieces and right angles is frequently rendered useless from excessive pressure arising from a desire to hasten the cutting operation and forcing the tools beyond their capacity. Many dentists hold on to their hand-burs until the edges of the leaves are entirely worn off, and then press on the hand-pieces or right angles so as to force the cutting, or even with new sharp instruments they use double or triple the requisite pressure and thus damage things generally. The necessarily delicate mechanism of the hand-pieces and right angles will not successfully stand such treatment. The gearing of right angles, although made as strong and heavy as the space will permit, is nevertheless quite a weak affair, and should be used carefully and cautiously.—*Western Dental Journal*.

The Action of Saliva on Bacteria.

Dr. Triolo, of Naples, has been investigating the above subject by new methods. Having first thoroughly disinfected the mouth with corrosive sublimate 1 in 1000 or permanganate of potash and then wash out with distilled water until no trace of the germicide could be detected, the saliva was taken fresh from the mouth, and its effect observed on various germ cultures. The result showed that the saliva possessed decided bactericidal properties, killing old cultures (five days) and diminishing the number of recent ones (eighteen hours). Saliva filtered (as in Sanarelli's experiments) has very little germicidal action. Very little difference was observed between parotid and submaxillary saliva as

regards their action on germs. Indeed, the author believes that the chief germicidal action of the saliva must be attributed to the secretion of the muciparous glands of the mouth.

BRIEFS.

Ferropyrine is recommended as a hæmostatic in cases of bleeding after extraction of a tooth.—*Dental Review*.

A Good Trimmer.—A sharp pointed penknife is very useful for trimming around plain teeth.—*H. D. Weller, Ind. Journal*.

To Clean a Mixing Slab, use aqua ammonia. A few drops allowed to remain a short time will make the cleaning easy.—*Western Journal*.

Flask Lifter.—A common soup ladle with holes made in the bottom to let the water out, is useful to lift hot flasks out of hot water.—*Dom. Journal*.

Cure for Septicemia.—Creosote, with equal parts of camphorated oil and given hypodermically, is suggested as a sure cure for general septicemia.—*Med. Summary*.

Moulding Sand.—Take ordinary bath-brick finely powdered. Add about 40 per cent. to your moulding sand. It makes a cohesive, compact and sharp impression.—*Dom. Journal*.

How to Become a Moss-Back.—He who graduates now, unless he associates with his fellows and reads, will, in a short while, find the moss growing on his back.—*Amer. Dental Weekly*.

Old Journals.—Look back over them from time to time, and you'll discover that you either never read them before, or that you've forgotten many valuable hints they contain.—*Dom. Journal*.

Collodion for Wounds and Abrasions.—Dr. Walker covers all slight wounds of the fingers or abrasions of the skin with collodion, which affords protection and is not easily rubbed off.—*Dental Weekly*.

Tacks.—Common cut tacks. Drive them in any form you like into plaster models to make air-chambers. Use them for some lower sets. Do not leave them on your laboratory stool.—*Dominion Journal*.

Jewelers' Files are very useful in crown and bridge work. Much more can be accomplished with small files, especially around the crowns where bridge teeth have been anchored.—*H. D. Weller, Ind. Journal*.

To Prevent Checking of Porcelain.—To prevent the porcelain being checked by the borax, it is coated with a varnish composed of four parts yellow ochre and one part boracic acid.—*Dr. Young, in Register.*

The Labial Wall.—A filling packed against the labial wall is far more liable to resist the recurrence of caries than if the labial wall be cut away and the filling packed against the lingual wall.—*D. D. Atkinson, Dental Weekly.*

In Case of Peridental Inflammation, seal creosote on cotton or spunk in the cavity for a day or two and wait until the inflammation has subsided. If it does not abate in forty-eight hours, arsenic is the only resource.—*L. G. Noel.*

A Perfect Model.—To make a perfect model, mix the plaster thin, and with a camel's hair pencil work it into the impression up to the gum outline, pour the remainder of the plaster in the impression.—*H. D. Wilson, in Dental Weekly.*

Protect the Clothing.—Most of women do not mind so much being hurt, as they mind having a nice dress spoiled. Use a rubber apron for the dear creatures when taking impressions; you'd make a much better one, too.—*Dom. Journal.*

To Clean the Marble upon your cabinet or table, take 2 parts common soda, 1 part pumice-stone, 1 part powdered chalk. Mix with water. Rub well over the marble. The stains will be removed, then wash with soap and water.—*Western Journal.*

Mounting Carborundum.—If the wheel is warmed and the hole filled with melted sulphur, it may be permanently mounted on a chuck, truing it by revolving it in a lathe or the engine, and when true dipping it into cold water.—*Practitioner and Advertiser.*

Mal-Occlusion.—As regards mal-occlusion, I believe fully 90 per cent. of all cases have this condition present, and if not the etiological factor, it is at least the active source of irritation without consideration of which cure is impossible.—*G. V. I. Brown, Items.*

To Clean Nickel-Plated Surfaces.—A German goldsmith's journal states that nickel surfaces may be readily cleansed of the spots which frequently appear upon them by the application of a mixture of 1 part of sulphuric acid and 50 parts of alcohol.—*Amer. Druggist.*

Protect Investing Material.—Whatever is used for investment material in soldering extensive bridges, do not depend upon that alone, but make a rim cup of copper plate into which the piece and investment is placed, and thus preclude separation.—*Western Dental Journal.*

Rubber Finger.—You can buy in rubber stores, rubber fingers, which are useful if you have to finger foul mouths, and are just the thing to have on the finger of the hand which you use in the mouth when keeping the lips and tongue out of the way in extractions.—*Dom. Journal.*

A Neat Little Marker to Use on Broaches in Measuring Root Canals is the little round rubber waste made by using the punch on the rubber dam. A broach will easily pierce the rubber, which can then be readily adjusted to any length.—*M. A. Mason, Ind. D. Journal.*

Romanium.—This is the name given to a new alloy of aluminum with tungsten and nickel. It is comparatively light and resists acids well. It is said to have the consistence of good manganese bronze, and is extremely malleable. It contains 95 per cent. of aluminum.—*Scien. American.*

Orthoform.—Einhorn and Heinz (*Munchener medicinische Wochenschrift*), state that orthoform induces anesthesia of only those parts with which it comes in contact, and has no effect when applied to the unbroken skin. If it is applied to a burn of the third degree, the anesthetic effect is remarkable.

A Laboratory Suggestion.—Saw large spools in two lengthwise. Handy to lay instruments on. For a bench block drive nail through a spool on your work bench. Fasten spools anywhere convenient in or near your operating stand so that they will hold your floss silk and gilling twine.—*Dom. Journal.*

Carborundum versus Arkansas Stone.—It may not be generally known that Arkansas stone can be ground or cut to almost any shape desired with a carborundum wheel, run quite dry, but that the Arkansas stone will grind or cut the carborundum if the carborundum wheel is fed with oil.—*Ash's Circular.*

Instruct Patients.—We see the teeth of school children going to pieces for want of proper care, and what do we do? Introduce some cement filling, and tell them to call again in four or six months, instead of demanding in a voice of thunder, that oral hygiene be taught in our schools.—*A. K. Fort, Amer. Dental Weekly.*

Treatment of a Wounded Finger.—In case of a wounded finger Dr. J. Y. Crawford recommends wrapping tightly with a ribbon of bibulous paper and floss silk and immersing in alcohol. He believes that when alcohol is absorbed into the system, *pari passu* with the toxin, there is elaborated an antitoxin—something which annihilates toxic influences.—*American Dental Weekly.*

The Statistics of Anesthesia.—M. Gurlt, of Berlin, has collected the particulars relating to 58,769 cases of anesthesia. Chloroform was administered in 27,000 cases, with 29 deaths. Ether was given in 19,856 cases, with three deaths. In 5,890 cases, both chloroform and ether were used, no death occurring in the entire series.

Amalgam Stain.—Some suppose that the stain of an amalgam comes from its oxidation by age. This may add to it, but there is at least nearly as much stain when first made. If the tin is burned it is sure to make black stain. But besides this, and that which cannot be avoided, is the stain of the silver.—*Medico Dental Gazette.*

Gelatin as a Hemostatic.—Carnot uses a solution of gelatin as a hemostatic. A five-tenth per cent. solution of gelatin in normal salt solution, sterilized, by heating to 100° C. for fifteen minutes on two successive days, injected into the nasal cavity, will stop bleeding from the nose in a few minutes. The solution should be the temperature of the body.

To Prevent Oxidation of Gold while Soldering.—A very useful help in protecting portions of gold-work from oxidizing while soldering will be found in the use of a solution of yellow ochre of a creamy consistence, painting the parts to be protected. This will be useful also in limiting the area upon which solder is to flow in crown- and bridge-work.—*J. T. Usher, Cosmos.*

Secret Preparations.—No reputable physician would administer a remedy without full knowledge of its name, proportionate combination, and therapeutic action. Any dentist who does so makes himself liable to the charge of being disreputable. But it is my purpose, if possible, to make him liable to a much graver charge. I wish him to be amenable to the law.—*R. Ottolengui, Items.*

Rubber Rings and Their Uses.—Keep an assortment of small rubber rings on upright pieces of wood or steel, the size of a match. I often use them for ligaturing rubber dam. Slip on and off easily; do not hurt gum like silk. Handy too in keeping in cotton, etc., over temporary preparations in large and shallow approximal cavities. Can cement them over cavity.—*Dom. Journal.*

Little Things.—If we are careful of the little things of our appearance, and manners, and conduct, the great things will take care of themselves. A small blemish in the countenance mars the whole beauty. A little vulgarity, even from one looking clean and wholesome, is a stench in our nostrils. Dirty nails, unkempt hair or slovenly dress in a dentist, otherwise esthetic, is intolerable.—*Dental Brief.*

How to Pack Amalgam.—I use instruments as large as the case in hand will permit, and tap the amalgam toward the walls and bottom of cavity. I can get a more homogeneous mass by tapping than I can by burnishing or pressing. Tapping has a tendency to bring the mercury in an amalgam into motion, and produce a softer mass than by any other means.—*A. Jameson, Indiana Dental Journal.*

Formalin will Kill the Dental Pulp.—Lepkowsky, in his experiments on animals, says there appeared to be no doubt that a 40 per cent. solution of formaldehyde is a poisonous substance, which is able, like arsenious acid, to destroy the vitality of a pulp even through a covering of healthy dentine. Weaker solutions (10 to 5 per cent.) exert a much weaker action both on the dentinal fibrils and on the pulp.

To Prevent Broaches Turning.—I have long been troubled by having my canal cleansers turn and pull out readily from the handle, but to-day I easily fixed a couple so they do not. One way is to coat the shank with soft solder, but the better and more convenient method is simply to roughen shank by the easiest means. I accomplished it by simply striking with the edge of a file.—*Dr. R. Matthews, Dental Digest.*

It is a fallacy to suppose that amalgam will equal gold in tooth-saving qualities, where *good* gold work can be done; there is no material known that is so well adapted, when cavities *are accessible*, as gold.

On the other hand, it is a fallacy to suppose that gold is always better than amalgam; there are places where *no* man can make a good filling, and many places where the average man can not.—*Western Dental Journal.*

Diphtheria Contracted From a Chip-Blower.—At the Southern Society meeting Dr. B. Holly Smith related the case of a dentist who had contracted diphtheria inhaling particles from the chip-blower used for a patient who had been dismissed as cured two months before. She was wearing new garments, her hair had been sterilized, etc., and yet she communicated diphtheria to her dentist two months later.—*American Dental Weekly.*

To Hasten the Hardening of Cement Fillings.—"Dressing Seal"—which needs too much heat for a dressing seal in my hands—answers admirably for hardening cement fillings, as, when made quite soft, almost fluid, the heat is sufficient to quickly harden an otherwise slow setting material, and usually a film of gutta-percha can be left as a protection from the fluids for a time. An oxychloride may be rapidly hardened in this way, which would set slowly otherwise.—*W. B. Ames, Items.*

How to Prevent Porosity in Vulcanizing.—It is very annoying to vulcanize a thick plate, and have it come out porous. This may be avoided by packing pink rubber in the center of the thickest places. The plate will be as tough and strong as though all of red or black rubber, and will have no holes in it. Care should be observed to cover the pink rubber so that it will not reach the surface when the plate is polished.—*E. B. Edgars, in Items.*

Poisoning from Cocain applied to the Tooth Pulp.—Dr. Moore, of Frankfort, has recorded a case of symptoms of poisoning which he affirms was caused by the application of cocain to the dental pulp by means of the electric current. After thorough investigation to discover the cause of the accident, he is convinced that the apical foramen was very patent, so that the cocain rapidly entered the system.—*Brit. Jour. Dental Science.*

Do Not Use a Steel Spatula for Mixing Cement.—A plain steel spatula should never be used for mixing oxyphosphates, for if the acid of the liquid portion has been properly neutralized, or toned down with phosphates, it is damaged by its action on the steel of the instrument, forming phosphate of iron, which necessarily changes the texture of the cement mass, and often changes the color to an objectionable extent.—*W. B. Ames, Items.*

To Cool an Investment.—There is no doubt that teeth crack on cooling, after the soldering process, as often as when they are being heated, and perhaps oftener. If, when the case is left to cool, a small box or bucket is placed over it, the cooling will be slower, but more uniform, and will give better results; there is no doubt that the cool air striking the case while still hot has much to do with checking the teeth.—*D. D. Atkinson, Dental Weekly.*

Reproducing Gum Tissue.—A good deal has been said of late about reproducing gum tissue by local irritation. It strikes us that gum tissue by local irritation. It strikes us that gum tissue, reproduced in that way, would be undesirable in the mouth, as long as it remains the product of irritation, and it strikes us that as soon as the exciting cause of its growth is removed it will resume its original shape. This is the way it looks to us.—*D. D. Atkinson, Dental Weekly.*

A Combination of Cohesive and Non-Cohesive Gold in Finishing.—I roll Williams' cylinders somewhat harder than we receive them, place and wedge them in the cavity, and mechanically insert cohesive gold. While the cylinders are somewhat soft we can mechanically place a strip of No. 30 foil and combine the two. The entire operation

is done in shorter time and has merits not found in such cavities where cohesive gold is used exclusively.—*A. F. Merriman, Med. Dental Gazette.*

Applying a Crown to a Badly Broken Tooth.—I never yet saw a tooth broken so far under the gum that I was not able to re-attach the whole crown, so that I could not discuss the question of drawing the root down and then pushing it back. I have always succeeded, in the cases of broken teeth which I have treated, by packing cotton in the cavity and, pushing the gum away on all sides, set the pivot in what was left of the root, if there was enough to carry a crown at all.—*S. G. Perry, Cosmos.*

Drugs and Condiments.—Hare calls attention to the fact that the absorption of many drugs may be facilitated and a more marked physiological reaction obtained by prescribing with them a stomachic stimulant such as powdered capsicum. Experiments with potassium iodide showed that the characteristic reaction for iodine was much more quickly obtained from the saliva of patients to whom the salt was administered along with the stimulant, than when it was given alone to the same individuals.—*Therap. Gaz.*

Cataphoresis and Bleaching Teeth.—A great many prominent men in the profession have advocated the use of cataphoresis in bleaching teeth, and a good many of us have met with considerable success. I am rather surprised that any of us have ever met with success, because we have always used the wrong pole of the battery: we have used the positive pole when we should have used the negative, and our success has been owing to the pyrozone and not to cataphoresis.—*W. St. Geo. Elliott, International.*

The Use of Pyrozone Solutions.—I would not use a 25 per cent. solution of pyrozone in a living tooth, and not in a dead one until the foramen had been completely closed. If we use the ethereal preparations of H_2O_2 in a dead tooth without first sealing the foramen, we will have many reasons to regret our lack of caution. We can use the three-per-cent. aqueous solution of pyrozone with a great deal more freedom, but even with that the best practice is to seal up the foramen.—*Dr. Allan, in International.*

A Good Local Anesthetic which will not cause sloughing or any other ill results:

Cocain	-	-	-	-	-	-	-	12 grains.
Atropia	-	-	-	-	-	-	-	$\frac{1}{6}$ grain.
Carbolic acid	-	-	-	-	-	-	-	8 drops.
Aqua dist. ad.	-	-	-	-	-	-	-	1 oz.

Sig. Inject from five to ten drops and immediately operate.—*H. D. Weller, Ind. Journal.*

Management of Children.—Do not tell them you are not going to hurt them; it is not always possible to perform an operation on little children without giving them a little pain. I always tell them the exact truth. I do something that will not hurt them at first, and then if I do come to something that will give them a little pain I tell them they have got to be brave for a little while, that it may hurt them a little, but it will soon be over, and in that way I gain their complete confidence.—*Dr. Hartzell, Dental Review.*

Chronic Stomatitis caused by Amalgam.—Dr. M. C. Smith, Lynn, Mass., spoke of one of his patients who suffered with chronic stomatitis which resisted all remedies. After careful examination he found that a first molar had been filled with amalgam shortly after the second molar had been extracted, and that a piece of amalgam had fallen into the cavity from which the extracted molar came, and, remaining there, had been the cause of the trouble. He removed this, and the stomatitis disappeared.—*Cosmos.*

Shaping the Margin of Artificial Dentures.—While all the muscles may throw a denture out of position, yet by a proper form of the margins, some of them may be utilized as the most important force for retention; notably the buccinators and the orbicularis oris. A careful examination of the attachments of these muscles should be made and in shaping the margins their movement should be opposed to each other in such a way that they will be compressed upon the denture and hold it firmly.—*A. O. Hunt, in Dental Review.*

Care in the Use of Formaldehyde.—Mr. Robbins emphasizes the need of care in using formaldehyde, stating that he suffered from severe conjunctivitis and had to be kept in the dark for two or three days, owing to the irritation set up by the use of a 40 per cent. solution in water evaporated over a Bunsen burner to fumigate a room. Later a peculiar form of chemosis exhibited itself, followed by a cyst in one eye for which an operation by the ophthalmic surgeon became necessary, who thought it due to the irritation.—*Dental Record.*

The Value of Rinsing.—One thing not often spoken of in reference to cleaning teeth is the value of rinsing. Many patients know nothing about it, and the average dentist does not think it worth while to mention it to them. The matter of closing the lips and forcing water vigorously backward and forth, between the teeth, exercises an important part in the cleansing of the teeth. I take water in my own mouth and show patients how they ought to rinse their mouths after the use of the brush.—*Garrett Newkirk, Dental Review.*

Facial Neuralgia from Necrosis.—Patient, a woman about 50, with a fine set of teeth—almost perfect. She had slight pyorrhea of the first molar. The pain in her face she had had for about three years, having been treated by specialists, and had her throat and nose examined, but nothing could be found. I could find nothing, and sent her to have the first molar taken out; she came back and I found necrosis extending up to the floor of the antrum, but there was no apparent outward sign of any trouble.—*Dr. Russell, Items of Interest.*

Dishonest Dentistry.—This practice of crowning teeth is reaching such magnitude that it may well claim our serious attention. Scores of good teeth that might be made serviceable for years by filling are ground down and crowned, till we “lift our hands in holy horror” at the dental offices becoming dental slaughter-houses. I know personally of a case in which a dentist insisted upon crowning four teeth, only two of which had cavities larger than a pin-head, and the cavities in those two were not bad ones.—*J. F. Burket, in Western Dental Journal.*

Pain in the Ear due to a Carious Wisdom Tooth.—This case is an example of a fairly common condition. A nurse was sent to me on account of earache, and deafness in the right ear. On examining the ear I found the membrana tympani healthy. I then examined the mouth and found the lower wisdom on that side extensively decayed. The tooth was extracted and the pain was relieved. The deafness was due to Eustachian obstruction, and was soon cured by inflation with the Eustachian catheter.—*E. W. Roughton, Brit. Journal.*

Surfacing an Amalgam Filling.—In shaping, or rather surfacing this kind of a filling, when I do so before it hardens I use a piece of tough wet spunk, held in the pliers, and gently brush toward the edges of the cavity. If the filling is slightly harder, I feed a wisp of cotton on to a revolving engine bur, and wetting this, use it as a buff-wheel or surfer. I always try to polish this kind of a filling at a subsequent sitting, but occasionally a patient gets away who knows more what he wants than I do.—*A. Jameson, Indiana Dental Journal.*

The Benefits of Dental Societies.—Young dentists frequently refrain from attending dental meetings because they think they cannot afford the time and money. There are very few really successful practitioners who have not been faithful attendants upon society meetings. There is a Biblical proverb that should be printed in large letters, framed and hung in every office. It is as follows: “There is that scattereth and yet increaseth; and there is that withholdeth more than is meet, but it tendeth to poverty.”—*From Editorial Dental Practitioner and Advertiser.*

A Convenient Borax Solution.—In soldering gold crowns I use a saturated aqueous solution of borax, made by filling a bottle with water and dropping into it a lump of borax. This is allowed to boil on top of my vulcanizer or elsewhere, and the water will take up a certain amount of the borax, leaving the residue undissolved. An ounce of this solution will last a busy man about a year. In using it the piece to be soldered is simply moistened where the solder is wanted to flow, and the solder will run like a flash, much easier than when the borax powder is used.—*J. T. Usher, Cosmos.*

Handy Insulator in Cataphoresis.—After rubber dam has been applied, cut a strip of dam which when stretched twice its length will be broad enough to reach from the gum to and overlap the crown of the tooth opposite the cavity which you wish to fill. Now pass one end of the strip under the clamp when it rests on the dam, stretch strip and pass between the teeth, covering the one you wish to insulate and back to and under clamp on opposite side. No amount of friction of instrument against the dam while applying current will rub it off as is the case with chloropercha.—*W. H. Richards, in Amer. Dental Weekly.*

How to Repair a Richmond Crown.—Where it is necessary to put on a new facing, grasp the crown at the extreme lower end of the ferrule with a suitable pair of pliers (the large cone-socket pliers with serrated beaks); it will come away readily, without in the least disturbing the root. Replace the crown on the root and take a plaster impression. Take the crown off the model, place in a vise, and with a file dress down the backing; drill holes for pins and ream them out on both sides for solder. Grind the facing and burnish thin platinum to the tooth and solder, without, of course, bending the pins.—*R. Erler in Cosmos.*

Cocain in Vaseline.—When I was in Paris, in 1886, in a conversation I had with Dr. Paul Du Bois, who was professor of therapeutics, I found he was using cocain by having previously dissolved it in liquid vaselin, and he got very excellent results with minute doses, and when I came home I used it in that way, and to this day I have continued to use cocain in liquid vaselin. You do not require so much of it, and it is readily diffused, and the cocain is rendered sterile by being dissolved in a little vaselin, as as you do not have to use much carbolic acid, and I like it very much.—*A. W. Harlan, Dental Review.*

How to Make Unruly Children Open Their Mouths.—A practical point came to hand today that may some time be of use to some of your many readers. A young lad of tender years was taken by his mother to the dentist. He was very brave and talkative until seated in the operating chair preparatory to an examination, when he absolutely

refused to open his mouth. After considerable persuasion on the part of the mother and the dentist without avail, the mother, impatient with her offspring, grasped him by the nose, and shut off his supply of air until he was compelled to open his mouth.—*M. A. Mason, Indiana Journal.*

How to Avoid Inhaling Patient's Breath.—Dentists could save themselves much from the unpleasantness and unhealthfulness of inhaling their patient's breath, while performing long operations in gold filling, when the rubber dam is applied, by placing a sheet of paper from a gold foil book before the patient's nose, securing it under the dam and elastic fasteners. It also prevents the moisture from the breath coming in direct contact with the gold while packing. This makes it equally agreeable to the patient. This suggestion may not be new to many of our professional brethren, but it would be well if it were more practiced.—*Dominion Journal.*

Perfect Adaptation and Retention.—With an even pressure over the entire surface of the plate in contact with the mouth, a free movement of the anterior frenum and the anguli oris muscles, the anterior border of the buccinator, the compression of the buccinator at the posterior borders and the compression of the orbicularis oris at the anterior portions, a free movement of the lingual and sub-lingual muscles on the interior surface of the lower denture, with plenty of room for the tongue, accompanied with a stable pressure on the hard or permanent parts of the mouth will produce a perfect adaptation and retention of an artificial denture.—*A. O. Hunt, Dental Review.*

How to Remove a Pin Cemented to a Root, or to a Pivot Crown.—With a small abscess tubular knife in the engine hand-piece I cut the cement around the pin as far up as was expedient, and then with a fine-pointed hatchet excavator proceeded to finish the operation, applying the aqua ammonia to decompose the remaining cement, and protecting the gum underneath with a piece of rubber-dam covered with a napkin, stopping occasionally to rinse the mouth with warm water. After ten or fifteen minutes' manipulation my efforts were rewarded by a slight movement of the pin, when I seized the end of it with a small pair of pliers and with a rotary motion removed it.—*W. B. Mead in Cosmos.*

Insulation and Cataphoresis.—It is always advisable to insulate fillings, and it is also good practice to put two thicknesses of rubber dam over the tooth on which you are working to prevent any possibility of the cocain getting beyond the tooth to the tissue. Suppose an operator is careless and while working on a labial cavity the current is gradually turned on, the cocain leaks through the rubber and anesthetizes the gum

tissues and pulps. It is admitted by the disciples of the graphite instrument that the current may increase in their instruments but not diminish. Now it is usually at the point of poor contact that current burns tissues, and if some of these instruments allow enough current to penetrate the numbed tissue and your contact is poor, sloughing will result.—*Dr. Keefe in Dental Review.*

Method of Repairing Broken Plaster Casts.—Drop half a teaspoonful of fine plaster on the rim of a plate, and flow a little water into the plate, so that the plaster is soaked. Take a fine camel's hair pencil and dip up the wet plaster almost as thin as the water itself, and smear this over the crack when the broken parts are placed together. The water soaks into the model and the moist plaster enters the crack, firmly reuniting the parts when thoroughly hardened. It is best to chip out tiny fragments along the edges of the broken pieces, so as to afford a little space in which the new plaster may find lodgment. Not only may repairs be effected in this manner, but even lost parts of teeth may be restored, with a little deftness and a knowledge of tooth shapes.—*R. Ottolengui, in Items.*

Root-Canal Treatment.—Place in the pulp chamber a 50 per cent. solution of sulphuric acid, and pump this acid into the root canals with the finest nerve bristles at once to rapidly enlarge these so frequently quite inaccessible canals, and at the same time to disinfect strongly these. If now one uses, in order to neutralize the acid, not bi-carbonate of sodium, as Callahan advises, but sodium peroxid, which I have used for six months, and can thoroughly recommend, we get in the root canals the reaction $\text{H}_2\text{SO}_4 + \text{Na}_2\text{O}_2 = \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}_2$ a rapid evolution of peroxid hydrogen, in *statu nascendi*, which effects prompt sterilization. So we have a method which after many experiences I regard as ideal.—*H. Bonnecken, Dental Record.*

Shaping and Improving the Appearance of the Natural Teeth with the Wheel Used in the Dental Engine.—I believe our duty is to remove the ends of all elongated teeth, unsightly angular surfaces, or other defects, rounding corners, etc., thus producing a greater uniformity in the cutting edges. In following this practice it is seldom necessary to operate upon more than two or three teeth for one patient. Take overlapping central incisors, and usually we have a portion of the cutting edges below the line of eruption, and it is nearly always the distal proximal cutting angle, because the turning of the teeth outward pushes this corner down below the normal position, but by dressing it off the teeth not only look better, but the crowded condition is less conspicuous.—*M. A. Webb, in Dental Review.*

Dental Colleges of the United States—Matriculates & Graduates. Session '97 and '98.

COLLEGE.	MATRICULATES.	GRADUATES.
Baltimore College of Dental Surgery.....	232	75
Ohio College of Dental Surgery.....	206	66
Pennsylvania College of Dental Surgery.....	376	100
Philadelphia Dental College.....	409	141
Missouri Dental College.....	124	39
New York College of Dentistry.....	221	47
*Dental Department, Harvard University.....	130	46 seniors
†Boston Dental College.....	226	57 seniors
*Dental Department, University of Michigan.....		
University of Pennsylvania.....	438	100 seniors
Dental Department, Vanderbilt University.....	184	54
Indiana Dental College.....	187	52
Dental Department, Howard University.....	27	5
Dental Department, University of Tennessee.....	98	14
†Dental Department, University of California.....		
State University of Iowa.....	148	61
Kansas City Dental College.....	85	32
Chicago College of Dental Surgery.....	525	163
Dental Department, University of Maryland.....	207	64
†Dental Department, National University.....		
Northwestern College of Dental Surgery.....	76	21
Dental Department, University of Denver.....	47	5
†Louisville College of Dentistry.....		
School of Dentistry, Central Tennessee College.....	19	4
†Dental Department, Columbian University.....		
Dental Department, Southern Medical College.....	80	13
Dental School, Northwestern University.....	480	175
*College of Dentistry, University of Minnesota.....	96	16 seniors
Dental Department, Tennessee Medical College.....	14	5
Dental Department, Ohio Medical University.....	103	14
Western Dental College.....	203	54
*Dental Department, Detroit College of Medicine.....	97	26 seniors
New York Dental School.....	50	10
Dental Department, University of Buffalo.....	178	66
Dental Department, Western Reserve University.....	90	28
University College of Medicine.....		
Cincinnati College of Dental Surgery.....	89	18
Birmingham Dental College.....	34	8
Dental Department, Milwaukee Medical College.....	91	17
Atlanta Dental College.....	185	61
Tacoma Dental College.....	33	0
Dental Department, Marion-Sims College of Medicine.....	75	16
Dental Department, Baltimore Medical College.....	60	18
†Dental Department, University of Omaha.....	59	8
†Pittsburg Dental College.....	152	18
†Dental College of Physicians and Surgeons.....		
†Colorado School of Dentistry.....		
Total.....	6,131	1,726

* Commencement not yet held so give number of seniors.

† Applicants, but not yet members of Nat. Association of Dental Faculties.

‡ Would not give information asked.

EDITOR'S NOTES.

Process Patents.

AT a recent meeting of the New York Dental Society, Dr. Ottolengui, correspondent, reported regarding the progress of the proposed amendment to our patent laws, that emanated from that society. The matter has been presented to the Senate committee, and within the last few days was formally introduced in the House. Dr. Ottolengui has the endorsement of about 3,000 members of the dental profession, and support of the S. S. White Co., the Consolidated and other manufacturers.

This is an important measure because it reaches to the root of an existing evil that should be eradicated. The dental profession has been hampered by patents, and unjust burdens been imposed by patentees holding patents covering methods and devices for treating human disease, ailments and disabilities. It was unjust imposition that brought about the formation of the Dental Protective Association. This Association has been the means of doing much good in the past and deserves the hearty thanks of the profession, but it cannot be kept up indefinitely. Amend the patent laws so that no injustice can be imposed on the dentists and we shall need no protective association to defend us against these process patents. Such has been the design of the committee and the amendment as introduced in the House reads: "But no patent shall be granted upon any art of treating human disease, ailment, or disability, or upon any device adapted to be used in the treatment of human disease, ailment, or disability, or attached to the human body and used as a substitute for any lost part thereof, or upon any art of making such device, unless such device is adapted to be put on the market and sold substantially complete and ready for use or attachment."

"Nor shall any suit or action be maintained for the infringement of any patent for an art of treating human disease, ailment, or disability, or for any patent for any device adapted to be used in the treatment of human disability, ailment, or disease, or attached to the human body and used as a substitute for a lost part thereof, or any art of making such device, unless it appears

that such device can be made and put on the market substantially complete and ready for use or attachment."

To get rid of an evil it is necessary to root it up. This amendment seems to do that effectually so far as process patents are concerned. Every dentist is personally interested in this matter and if you have not already done so you should write your representative in Congress and urge him to support the measure.

SOCIETIES.

National Dental Association.

THE attention of the officers of the State Societies is called especially to the fact that delegates to the National Dental Association are received only from State Societies, and that the delegates must be elected at some regular meeting of the State Society, and by ballot. Each Society is entitled to one tenth as many delegates as it has members.

Will the officers of each Society see to it that full delegations are elected of representative men that will be likely to become permanent members of the National Association?

The officers of the National Dental Association will leave nothing undone to make the meeting at Omaha a success, and they hope the attendance and interest in the first active annual meeting of the Association will be commensurate with its importance.

By order of

EMMA EAMES CHASE,
Corresponding Sec'y.

THOMAS FILLEBROWN,
President.

Eastern Branch of the National Dental Association.

A MEETING of eastern members of the National Dental Association met at Albany, N. Y., May 12th, 1898, for the purpose of forming an eastern branch of the National Dental Association. Dr. H. J. Burkhart was chosen temporary chairman, and L. P. Bethel, secretary *pro tem*.

Dr. V. H. Jackson moved that the members proceed to organize an Eastern Branch of the National Dental Association.

After an animated discussion pro and con., the motion was carried.

Dr. Thos. Fillebrown moved that before we proceed to further organize the branch a committee of three be appointed to draft constitution and by-laws and report at the next meeting of the National Dental Association. The motion was carried and Drs. Thos. Fillebrown, S. A. Freeman and L. P. Bethel were appointed a committee on constitution.

The meeting then adjourned.

Haskell Post-Graduate School of Prosthetic Dentistry.

IN consequence of absence, giving a course of clinics in Europe, the school will be closed during August and September. Dentists intending to taking the course before that will need to enter by the first week in July.

L. P. HASKELL, Pres't.

G. A. YANT, Sec'y.

New York State Society.

OFFICERS elected at the meeting held May 11-12, 1898, were as follows: President, F. L. Ames, Albany; Vice Pres., J. I. Hart, New York; Secretary, C. S. Butler, Buffalo; Treas. C. W. Stainton, Buffalo; Correspondent, R. Ottolengui, New York.

Nothern Ohio Dental Society.

A BUSINESS meeting of this society will be held at Put-in-Bay at the time and place of the Tri-State Meeting, June 21-22-23, 1898.

W. T. JACKMAN, *Corresponding Sec'y.*

Northern Iowa Dental Society.

THE fourth annual meeting of the Northern Iowa Dental Society will be held at Waterloo, July 5, 6, and 7, 1898. A very fine program is being prepared, and we expect to have an interesting and profitable meeting.

The Waterloo Chautauqua Assembly will be in session, and all who attend the meeting will have an opportunity to take in some of the best numbers on the program. Reduced rates on all railroads.

W. H. STEELE, Sec'y,
Forest City, Iowa.

Tennessee Dental Association.

THE 31st annual meeting of the Tennessee Dental Association will be held in the Auditorium of Lookout Inn, Lookout Mountain, Tennessee, commencing July 5th, 1898, and continuing 6th and 7th. A fine program is being prepared consisting of papers and clinics by eminent men of the profession. The Inn has made the exceedingly low rate of \$2.00 per day for members and visiting friends. Come and enjoy the glories of old Lookout with us for a few days. Excursion rates on all railroads to Lookout Mountain.

CHAS. H. SMITH, Secretary.

Tennessee State Examining Board will meet at Lookout Inn, Monday, July 4th, 9 A. M. All applicants for examination must present themselves on that day.

DR. J. L. NEWBURN, President, Memphis.

DR. F. A. SHOTWELL, Sec'y, Rogersville.

Second Tri-State Dental Meeting,

HOTEL VICTORY, PUT-IN-BAY ISLAND, LAKE ERIE, OHIO.

JUNE 21ST, 22D, 23D, 1898.

THIS promises to be the largest and most successful dental meeting ever held in this section of the country. Be sure and make arrangements to attend. The Traffic Association have granted special rates of one and one-third fare, on the certificate

plan. It is absolutely essential that *certificates be procured when ticket is purchased*. Dr. George E. Hunt will receive the certificates at the Island and have them properly countersigned, so it will be necessary to hand certificates to him as soon after arrival as possible.

Boats will leave Cleveland at 8:30 a. m., arriving at Put-in-Bay 12:45 p. m.; Toledo at 9:15 a. m., arriving at Put-in Bay 12:45 p. m.; and Detroit at 8:30 a. m., arriving at Put-in-Bay at 1:30 p. m. The lake ride from either point is delightful, the distance from Cleveland being 65 miles; Detroit, 60 miles; Toledo, 40 miles. Arrange to go Monday, June 20th, and enjoy a little outing before the meeting begins.

PROGRAM.

ESSAYS.

1. Development of Facial Contours by Moving the Teeth.—C. S. Case, Chicago. Discussion opened by G. H. Wilson, Cleveland.
2. Esthetic Dental Prosthesis.—George E. Johnson, Ft. Wayne, Ind. Discussion opened by Grant Molyneaux, Cincinnati.
3. The Personal Element in Practice.—A Jameson, Indianapolis. Discussion opened by C. B. Blackmar, Jackson, Mich.
4. Degeneration and Decay of the Oral Tissues from Lack of Exercise.—S. B. Dewey, Cleveland. Discussion opened by W. C. Barrett, Buffalo.
5. The Action of Heat Upon Dentine.—George W. Cook, Chicago. Discussion opened by W. H. Whitslar, Cleveland.
6. Have the Possibilities of Dental Art Been Reached?—H. A. Smith, Cincinnati.
7. Innervation of the Dental Pulp.—G. Carl Huber, Ann Arbor. Discussion opened by G. E. Hunt, Indianapolis.
8. Indigestion a Cause of Dental Caries.—J. H. Kellogg, Battle Creek, Mich.
9. A Dentist's Posture at the Operating Chair, and Its Influence on the Body.—Eliza M. Mosher, Ann Arbor, Mich.
10. Lecture with Stereopticon. Dental Caries: Its Character, Cause, and Effects.—W. C. Barrett, Buffalo.

CLINICS.

1. Electrode Holder.—C. W. Throop, Muncie, Ind.
2. Artificial Crown.—T. A. Goodwin, Warsaw, Ind.
3. English Tube Teeth.—H. A. Moyer, Kendallville, Ind.
4. Irregularity.—J. W. White, Knightstown, Ind.
5. Soft Gold.—J. R. Clayton, Shelbyville, Ind.
6. English Tube Teeth in Combination with Logan Crowns, for



SUNSET ROCK, PUT-IN-BAY.

- Full Upper Dentures.—F. R. McClanahan, Rushville, Ind.
7. Making Some Regulating Appliances.—A. Jameson, Indianapolis.
 8. Cohesive Tin Foil.—H. L. Ambler, Cleveland.
 9. Practical Piece of Continuous Gum Work, illustrating some new ideas. Also a new method of Swaging Aluminum Plates.—N. D. Edmunds, Chicago.
 10. Construction of Porcelain Crown; also Wire Drawing Machine.—J. F. Stephan, Cleveland.
 11. Fusible Alloy.—Grant Molyneaux, Cincinnati.
 12. Dental Separator.—F. F. Hoyer, Owosso, Mich.

13. A New Method in the Construction of Bicuspid and Molar Bridge Teeth.—H. T. Harvey, Battle Creek, Mich.
14. The Preservation of the Interdental Space by Fillings.—John L. Sweetnam, Manistee, Mich.
15. The Swaging of Caps and Plates by the "Shot Pressure" Methods.—J. C. Parker, Grand Rapids, Mich.

There will be other clinics but these are all the committee could give up to the time of our going to press.

Just what the *special entertainment* will be we cannot state at present, but the committee have raised a large fund, and promise something strictly first-class and appropriate for the occasion.



BLACK BASS SHOALS, PUT-IN-BAY.

No one living within a reasonable distance can afford to miss this great meeting.

EXTRA SPECIAL.

It is reported that the following special events will take place at such odd times as will permit, but the report has not yet been confirmed :

FIELD EVENTS.

Relay Race Across the Island.—Drs. George Field, H. A. Smith and J. E. Cravens.

Hurdle Race.—Drs. Todd, Dorrance and Clayton.

Pole Vault, (by the three Black Crooks.)—Drs. Callahan, Custer and Hacker.

Swimming Match, (Championship of Ohio).—J. Taft, Corydon Palmer and C. H. Harroun.

DEBATE.

Resolved, That dentists do not know how to take life easy. Affirmative, Dr. Brophy; Negative, Dr. Barrett.

Why a Dentist Should be an Inveterate Talker.—Affirmative, Drs. H. F. Harvey and O. N. Heise; Negative, Drs. Hunter and Field.

ESSAYS.

Why Dentists Should Subscribe for their Home Dental Journal; especially Indiana Dentists.—By Dr. George Edwin Hunt.

My Recollections of Dentistry Before the War.—Dr. H. T. Smith. Discussed by Drs. John Stephan and W. A. Price. (The Spano-U. S. War).

Why We Could Give Spain Pointers on Making a Cabinet.—H. Q. Altenberg, of the Ransom & Randolph Co.

ORATION.

What I Would Do if I Were President of the United States.—Dr. N. S. Hoff.

General Discussion on the Superiority of Parke, Davis & Co.'s Mixtures.

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CONTRIBUTIONS.

Destruction of Pulp and Gold Crown by Mercuric Action within Amalgam.

BY W. T. M'LEAN, M.D., D.D.S., CINCINNATI, OHIO.

I HAVE been greatly interested in the result produced by an amalgam filling inserted in a lower third molar, which was covered with a gold crown. The entire buccal surface of a right lower third molar was filled in March, 1894. The cavity extended below the gum margin and was not very deep. A few months after its insertion the patient returned and complained of a peculiar and very unpleasant taste about this particular tooth; it became very offensive. I attributed the annoyance to oxidation or an acid condition of the fluids of the mouth affecting the amalgam. I suggested that crowning the tooth with gold would no doubt prevent any further inconvenience, thinking that more convenient as well as more permanent. The patient permitted the operation as suggested and it was entirely successful; the unpleasantness became entirely eliminated. This patient returned a few weeks ago, being absent about four years—quite a long time without consulting a dentist. Her visit was for the purpose of having her teeth examined, on account of some slight inconvenience. Imagine my amazement when I beheld the gold crown

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entirely disintegrated and porosity everywhere noticeable, and the slightest effort removed it. This was surely the result of a physical and possibly a physiological action of mercury. I have always felt that there are idiosyncrasies whereby amalgam or mercurial medicaments are contra-indicated, and I believe that this experience will materially assist to bear out this *hardly settled question*. It has taken about four years for this change to occur—pulp is dead, incipient decay around a part of amalgam filling.

I have reprepared cavity, cleansed and antiseptically treated canals, filled them up with powdered asbestos, saturated with a 50 % solution of silver nitrat; filled tooth with gutta-percha, and made new gold crown, 21-k., and set it. Saw patient recently, and she is enjoying life from a masticatory standpoint, and I am thinking, conscientiously and scientifically, which is to blame, McLean or mercury? Some stomatological brother will confer a favor if he will explain.

A Case in Practice.

BY DR. J. C. BLAIR, TOLEDO, OHIO.

Miss X., aged 18.—The tooth in question was an inferior left first molar. It formally contained a distal proximal amalgam filling. Filling was removed to be replaced by gold. Upon removal of same, I found the nerve capped with cement. Here, I asked the patient if the tooth had ever given trouble. She said it had about a year ago. From this, I expected to find the pulp dead. So cement was removed. A spear drill was then used to open into pulp, but great pain was experienced. It was then determined the pulp was alive, so applied arsenic and left for twenty-four hours. Pulp was still painful. Then application of cocain was made with no results. When broach was passed into anterior and posterior canals, some pain was noticed, but a third canal of more than ordinary size, was found to be very painful. I injected cocain and used crystals on my broach, but no improvement. After probing carefully for a few minutes I found pus discharging from this canal. Peroxide of hydrogen was then injected. In swabbing the canal with cotton it was painful. Carbolic acid and formalin were alternately sealed and left for

twenty-four hours. This treatment was carried out for several days with no good results. The pus being present and still painful I then held a consultation with another practitioner who thought the conditions were the same as I had determined, viz: no bifurcation of roots, three canals, but undecided as to the presence of pus. An abscess at the root was mentioned but the extreme pain in opening into the pulp chamber and the third canal being so uncomfortable, on passing broach in, obviated this diagnosis. So I treated several times more with no better results. It was then decided to extract. After doing so, the following was exposed: The roots were bifurcated and there were but two canals instead of three. My broach instead of passing into a third canal was passing between the alveoli and the mesial portion of posterior root. This opening was caused by an abscess. It had formed between the bifurcation of roots and had dissolved the osseous tissue to the extent of one-third the size of a tack head. The pain was all due to this abscess and not to a live nerve, as will be readily seen.

Death of the Dental Pulp.*

BY F. E. BATTERSHELL, D.D.S., N. PHILADELPHIA, O.

WHEN the pulp is dead the tooth is said to be dead. Such is the common report. It will be affirmed here that this assumption is not true. The pulp is primarily the organ of growth for the osseous structure of the tooth, by which its calcification is to be ultimately completed. In some individuals this process is perfected comparatively early, from the thirty-fifth to the forty-fifth year; in others later, and in some persons who attain to advanced age, the pulp though very narrow in its channel is not altogether ossified. But though of frequent occurrence, such cases are still in the minority. Usually, with advancing age, the nerve becomes extinct and the tooth assumes a solid bony form of structure.

Is the tooth then dead? By no means. When cut or injured it is found to be devoid of sensation (yet in some cases it is discovered to be endowed with even this element without a nerve).

* Read at the Tuscarawas Valley Dental Society, 1898.

To all appearance of gum, of enamel, of pigments, it is as it ever was, healthy and congenial to its investments.

Still, it may be contended, is not the tooth dead when the nerve has been killed by your devitalizing agent, or through the agency of caries? And the rejoinder is again, no. When a tooth is dead it is foreign and incompatible to the living membranes to which it is related. When death takes place throughout the tooth structure, the root is absorbed or the peridental membrane becomes atrophied, and the tooth is expelled from the soft tissues. The idea very carelessly and widely maintained, that the pulp is the sustaining and nutritive agent of the tooth economy, is incorrect; it is the peridental membrane which performs this office, and not the pulp. The calcified and obliterated pulp affords an illustration of the complete action of the peridental membrane. However, when the pulp is present and normal, the two are correlated in the nourishment of the tooth. But the pulp may be destroyed and the osseous structure remain unimpaired. Though if the cementum remain unaffected, the tooth is still alive to its investments, and until the intimately related true bone or cementum is inert, the tooth is not dead to its reciprocating structures.

Odds and Ends.*

BY W. E. VAN ORSDELL, D.D.S., SHARON, PA.

I THINK I will try and call to your mind some of the small things you well know. These simple things that we are apt to think belong to the things not worth telling are often important. Some years ago one of our members, now present, was relating to a meeting how by the application of carbolic acid and iodoform to an exposed and aching pulp, he had been successful so often of late in giving relief. I had had the misfortune to kind of smile and in answer to his call down, I said I had been using the same application for several years and had thought it so simple as to be unworthy of mention. He used none of the adjectives Dr. Todd accused me of using, but the call down was quite as effective. So these odds and ends—these little things occupy such a space

* Read before the Lake Erie Dental Association, May, 1898.

that leave them out and we find ourselves stripped of the essentials. They enter so largely into the necessities that without them success is wonderfully handicapped. When we graduate we are full of the theory of our profession. Our castles of success stand out before us brilliant, clear, finished and inevitable. Little odds and ends that at first we think useless and only worthy of being kicked out of the way, we soon find must be looked after and cared for or we will find ourselves as badly stranded, as badly annihilated as the Spanish fleet in the bay of Manila. To tell all of them would take a book. To merely mention some may open the floodgates of your souls and you may tell of the many in your experience. In mechanical dentistry they assail us at every point. A set of teeth used to be a set of teeth, and the circular array of milk-white tombstones, grinning at us on every hand, said false—false as the hades their diabolic smiles reminded us of. Now we say prosthetic dentistry, suggestive of the higher art necessary in its production.

Seemingly small things, once thought not worthy of mention or attention, have led us from the days of tombstone falsity to the realm where nature truthfully redeveloped pleases the eye and cheers the heart as well. Attention to all detail in all directions, from the taking of the impression to the end of the operation, brings the success. The study of face, of complexion, of temperament, and all these things that we may get the type, the color, aye, even the set and arrangement of the teeth, have contributed to lead mechanical dentistry from a commonplace trade to a high prosthetic art and profession. To define the way and manner of how we do these things I cannot. To me it seems a kind of intuition, sometimes natural, more often the result of close observation and study—one of those things we can talk about, but can only acquire by developing the dormant ability within us.

In operative dentistry the little odds and ends that assail us are many. If we follow set rules for the preservation of all kinds and classes of teeth, without regard to temperament, health structure and such like things, we will find ourselves floundering by the wayside, with miserable ragged relics of our own bad judgment and incompetency assailing us on every hand. In preparing cavities we want to see to it that the chips and rubbish are removed, blown away as it were. With form and shape aright,

walls clear and smooth, foundation as perfect as the surroundings will admit, our antisepsis perfect; our fillings, from foundation to completion, built with care, and then even then how oft the hand of time makes sad havoc with them. The odds and ends of our mistaken diagnosis come home to us. Gold, where we should have had cement; amalgam, where gold or gold and tin would have been better, or where gutta-percha would have more successfully filled the bill. The lack of attention to the little odds and ends in crown work, as Dr. Wood has shown us, destroys the brilliancy, luster and usefulness of the crown we build. And bridges—we never ought to cross them you know until we come to them—a little defect in an abutment, an overlooked flaw in the building material bring such results we are not proud of them neither are the victims pleased.

The odds and ends, the clippings we throw away, so often carry with them the grand essentials that lead to prosperity, to competency, and to peace, comfort and happiness as well—so look after the odds and ends. Tell us some of the little things that help you. They may seem commonplace. In the isolation of my surroundings I may never have heard of them. It is just like that old saying, "take care of the pennies, the dollars will take care of themselves."

The little deed of kindness done, the little act of mercy shown, lead up to heaven, so the looking after the little odds and ends in business and in life lead us not through the byway and crooked path, but straight forward on the broad sunlit highway toward success.

The Senses in Dental Diagnosis.*

BY C. F. COOPER.

WHILE the senses are as numerous as the stimuli that excite the nerve-currents to pass from some terminal nerve-ending to some nerve-ganglia in the brain or reflex center, yet psychologists have grouped them all under two heads—the Special Senses and the General Senses.

The special senses each have their own sensor-organ, sensor-

* A thesis preparatory to graduation, given at the Ohio College of Dental Surgery, Cincinnati, 1898.

nerve and sensor-ganglia. Each one is absolutely distinct from all others. Each sensor-organ will be acted upon only by its own kind of stimulus, as the eye is acted upon only by light; the ear, by sound; the nose, by odor; the tongue, by taste; and the skin, by touch. Each sensor-nerve will conduct only its own kind of wave vibration. Each sensor-ganglia will receive only its own kind of wave vibrations. The stimuli of the special senses are always external agents, and are five in number—light, touch, sound, odor, and flavor.

The general senses are not each distinct and definite in character. They do not have special sensor-organs, sensor nerves and sensor-ganglia. They give us no knowledge of the external world, but only of the condition of different parts of the human organism. Psychologists have distinguished fifteen general senses—pain, hunger, thirst, etc.

The special senses are the only ones that directly concern the dentist in dental diagnosis. The general senses indirectly concern him in getting the subjective symptoms.

In diagnosing *any* disease we must be not only able to recognize the disease in question, but be able also to distinguish it from all other diseases. This latter process constitutes differential diagnosis.

Before attempting to diagnose any dental disease, we *should* know the past history, and we *must* know the present condition, of the patient. We may learn the past history from the patient (subjectively), but the present condition is determined almost entirely from the objective symptoms. However, the subjective symptoms are to be considered.

The senses are only an aid in dental diagnosis. Formerly, diagnosticians had to rely wholly upon the senses for their data, but now science has lent its aid in the thermometer, microscope, analytical chemistry, electricity and X-rays.

The dentist must have knowledge; he must know what is seen in the *normal* mouth; he must know the proper relation of the parts—their size, shape and color. These special senses are only auxiliaries in making a diagnosis, and would be of little, if any, use to the uneducated dentist. Therefore, it is important, yes, absolutely necessary, that the dentist know the exact histology, anatomy, and physiology of every part about the mouth. He should know quite thoroughly the morphology and physiology

of the whole body. Besides the normal condition he must know thoroughly the various *morbid* conditions of the parts he expects to treat. He must know the morbid morphology and physiology of the parts that concern him. When he knows this, then and not till then, will his intellectual senses aid him in diagnosing dental diseases.

The first special sense the dentist uses, if not the most important, when a case presents itself, is the sense of sight. As soon as the labial curtain rises the dentist views the stage upon which he is to act. With his visual sense the dentist will be able to detect therein atrophied parts, as in resorption of the gums; hypertrophied parts, as in hyperplasia of the gums; malposed parts, as in irregularity of the position of the teeth; partially decayed parts, as in caries of the enamel and dentine; malformed parts, as in cleft-palate, germination, etc.; discolored parts, as in pulpless teeth and green stains; unhealthy secretions and lack or excess of secretions, as in ropy saliva, febrile conditions and stomatitis, respectively: absence of parts once present, as in extracted teeth; abnormal growths, as in the various forms of epulides; presence of foreign substance, as in salivary calculus; in fact, any superficial condition other than normal; but it will not aid him in diagnosing conditions of deeper parts. For this he will have to rely upon some of the other senses. The sense of sight will also aid him in determining the different stages of anesthesia, as in nitrous oxid, chloroform and ether administrations.

The next most useful sense is the sense of touch. This sense is so absolutely necessary to the dentist, that it is difficult to tell whether any other sense can be more important.

With his tactile sense the dentist will be able to determine the condition of deeper parts, as in necrosis of the dental alveolar process; he will be able to ascertain whether parts are hard or soft, as in necrosis or caries of bone; whether smooth or rough, as in normal conditions as compared with caries of dentine, tartar formations, etc.; whether straight or crooked, as in the various directions of pulp canals; whether hot or cold, as in inflammatory conditions of gums as compared with healthy gums; whether or not pressure produces pain, as in distinguishing ulceration of the cheek from an epitheliomatous growth, or in distinguishing pulpitis from pericementitis; and often he will be obliged to use this sense in determining size and shape, as in

pulp canals, and cavities in teeth—when not in positions to be seen.

In using this sense some material in the form of an instrument usually forms the medium between the organ of touch and the object studied. Thus we are often at a disadvantage when using the sense of touch. How much better we could diagnose the condition of a pulp canal or sinus leading from a chronic abscess, if the nerve filaments were only at the point of the instrument instead of being only in contact with the handle of the instrument. In order that we may get the best results from the sense of touch in this manner, the medium should be light in weight, so that the wave vibration produced by the pressure of medium upon nerve-endings will not be as great as the wave vibration coming from point of instrument, caused by pressure of contact with object being investigated. The medium should be of convenient shape, so as to be held loosely in the hand. The material should be dense, as the wave vibrations would then be more distinctly transmitted.

With his listening sense the dentist will be able to ascertain the density of an object when struck, as in striking a dead or live tooth, the live or more dense tooth giving the clearer sound. He will be able often to locate inflamed conditions of pericementum and surrounding tissues, as when striking a tooth in the direction of inflamed area, a dull sound is heard.

The greater the area and degree of inflammation, the duller the sound.

Bödecker distinguished five different sounds, viz.: the *high*, produced by tapping teeth when mouth is wide open; the *low*, produced in same manner when mouth is nearly closed; the *clear*, produced when a normal tooth is tapped lightly; the *dull*, produced when tapping upon a tooth whose periodontal membrane is affected; and a *somewhat tympanic sound*, produced when superior second bicuspids or first molars are tapped—this sound is probably due to position of antrum cavity just above these teeth, and its connection with nasal cavity.

The character of sound given off when any tooth is struck depends upon its location, length of root or roots, number of roots, condition of periodontal membrane and surrounding tissues, elasticity of parts, age of patient, shape of oral cavity, and size of labial commissure when sound is produced.

These sounds must be considered in a relative or comparative sense, as they differ in different mouths and at different ages in the same mouth. The clearest sound produced by any tooth is probably the superior first molars, owing to their proximity to antrum and greatest number of roots and of comparative good length. The sense of sound plays a very important part in noticing the heart beat and respirations when giving anæsthetics.

With his smelling sense the dentist will be able to detect the various odors of diseases of the oral cavity, as well as the odors peculiar to the different races and different persons. He should not allow himself to get used to certain unpleasant odors about patients, as this would rob him of the use of the sense as a diagnostic aid. Such an act would lead to degeneration of the mechanism of smell instead of leading to its finer cultivation.

This sense will aid the dentist very materially in determining conditions of diseased pulps and of the antrum. He should notice very carefully the characteristic odors of empyema of the antrum, ozena of the nose, inflammation of the pulp and periodontal membrane, and in fact every septic condition of the oral cavity. The odor of the breath is often a diagnostic symptom, as in the sweetish breath connected with febrile conditions.

The sense of taste is impractical as a diagnostic aid.

All knowledge comes through the senses primarily. Therefore, it is important that we take great care of the special sense organs. This is particularly interesting to the dentist, because he requires exact knowledge of the parts he treats. Let there be an injury in the sensor-organ, and it fails to receive the wave vibrations just as they are given off from the object, consequently the mind is falsely informed and necessarily acts wrongly. This would likewise be true in case of injury to any part of the special sense mechanism.

The dentist should protect his eyes from too strong or too weak a light. He should be careful not to overwork the eyes, because his work can't be better than his eyes.

The dentist should especially guard against injuring the hands, as scar-tissue is almost if not wholly devoid of nerves. Every scar would lessen his power to collect wave vibrations from the object with which in contact. He should not allow the skin to thicken upon the fingers, as that would also hinder close contact with nerve-endings.

The dentist should take equally good care of his ears and nose, as both the senses, hearing and smelling, are delicate ones in diagnosis, and the organs are not useful unless in perfect health.

Every sense is capable of cultivation. Every sense must be cultivated, for in early childhood they all are very imperfect. As they are used and exercised they improve.

If the dentist wishes to educate his sense of sight, let him observe. Let him do with himself as Agassiz did with his new students, look upon two objects of microscopic investigation alike at first glance, until they could distinguish one from the other. Let him make a study of every mouth he examines, always looking for peculiarities and minute differences.

If he wishes to educate the sense of touch, let him distinguish with the fingers. Practice tends toward perfection. Let him refer to the blind to become conscious of the possibilities of this sense when educated, or to the skillful performer upon the piano.

If he desires to educate his sense of hearing, let him listen to sounds. Let him do as the great musicians who strike the same key over and over until the various harmonic tones are heard. Let him practice tapping the teeth in every mouth he examines, at the same time noting the different sounds produced.

If he cares to cultivate his sense of smell, let him smell perfumes. Let him go into the florist's garden and study the different flowers by their fragrance. Let him study the odors of the various diseases of the oral cavity.

In the cultivation of any of the senses "*attention*" should be the motto."

Let every dentist strive for the smell of a florist, the ear of a Beethoven, the touch of a Mendelssohn, and the sight of an Agassiz.

The Care of Children's Teeth.*

BY GEO. N. WASSER, D.D.S., CLEVELAND, OHIO.

THERE is no department of our profession that affords greater opportunities for us as dentists to contribute our mite towards the grand work of lifting up mankind, than that department which relates to the care of children's teeth. The educators and reform-

* Read before the Cleveland Dental Society.

ers are convinced now more than ever, that in order to bring about the results they wish to attain, that they must expend their efforts on the young. So we in our desire to have the world know the value of a good clean mouthful of teeth, must devote no little time and skill to the children.

There is one point upon which we might enlighten the parents and elders, namely: the folly of talking in children's presence of "the horrors of a dental office." It frightens them; and no doubt has been and is largely the cause of the horror that children usually have upon the occasion of their first visit to the dentist.

To be gentle and sympathetic with all is our moral duty, and especially so with children. Our first aim should be to gain the little one's confidence. It is a good idea to make the acquaintance of the little patient in the reception room, talking perhaps of things altogether foreign to the case in hand, and distract its attention. If the child is very timid it might be well to examine its teeth in an ordinary chair, or perhaps seated in the parent's lap. If the child is suffering, rather than attempt any operation that would involve additional pain, apply palliating treatment and have it return later for restorative measures. It is a good plan to attempt nothing more than cleaning at first visit, unless it is the mere application of some medicinal agent to alleviate pain. No doubt children do try our patience to the utmost, but let us keep in mind the probable consequences of any misadventure on our part.

I will say nothing about the order of eruption of the teeth, or their loss, as we are all more or less familiar with that phase of the subject.

The temporary molars should be preserved for three reasons: First, to prevent the child suffering; second, to facilitate mastication. This latter is of *extreme* importance, as these years are especially important ones in the child's growth. If he is prevented by pain from properly masticating his food, it will not be assimilated, and a habit of swallowing food without masticating, may be continued even when the permanent teeth have taken their place. Early loss of the deciduous second molar will allow the first permanent molar to move forward and occupy room that should be preserved by the bicuspids. If the first permanent molar thus moves forward of its natural position, a smaller arch

is left for the successional teeth. The result may be a constricted arch, a pointed arch, upper protrusion, or the labial displacement of the cuspids.

Diagnosis is frequently difficult on account of the trouble children have in making themselves understood. A child cannot always tell just where pain is felt, nor always remember its exact location. It is necessary to ascertain whether pain is caused by an erupting tooth, a nearly exposed pulp, a pulp inflamed and dying, a putrescent pulp or an alveolar abscess.

The conditions of operating on the deciduous teeth vary so much from those pertaining to the permanent teeth that a different consideration must be taken of filling materials.

The little patient's mouths are small. They are often too young to reason with or to understand the purpose of the operation.

Pink base-plate gutta-percha is a most valuable filling material. In approximal cavities where it is not exposed to wear, and where the shape of the cavity is such as to retain it, it is practically indestructible.

Occlusal Cavities.—Cut away the margins of thin enamel, remove decayed and softened dentine as thoroughly as possible without sacrificing the patient for the sake of thoroughness. No special attention need be given to form of cavity, except its mouth should not be larger than the rest of the cavity.

In approximal cavities cut away the enamel only enough to give access to the cavity, excavate decayed dentine, and trim the buccal, lingual, and cervical walls until a smooth, firm margin is obtained. In filling a single approximal cavity, build the gutta-percha right up against the adjoining tooth. Where two approximal cavities adjoin, fill them as one cavity, exercising care not to make undue pressure on the gums. The spreading of the gutta-percha, by the force of mastication will tend to separate the teeth, which is often an advantage. The advantages of gutta-percha are: that it is easily applied, insoluble, durable, non-conductor, the filling is finished as soon as the cavity is full, and it spreads under the force of mastication; thus it is kept in contact with the walls of a cavity.

Gutta-percha should be cut into small pieces and placed on a G. P. warmer, where they can be kept soft, but not heated enough to injure it. It should be applied with warm instruments.

As cement can be applied easily in undercuts and very irregular-shaped cavities, it is not necessary to cut away the enamel more than is sufficient to enable the operator to thoroughly remove the disintegrated dentine. Even the thorough removal of the latter is not as essential for cement as for other materials. If the edge of the cavity can be made smooth and the softened dentine sterilized, the cement will hermetically seal it and prevent further disintegration until it is worn away beyond the sound edges. Decay in deciduous incisors is more rare than in other teeth, and they are lost so early in childhood that it is seldom necessary to fill them. Zinc phosphate is the best material for the teeth. Amalgam is a valuable material; its use necessitates greater care in the preparation of cavities than is necessary with gutta-percha or cement. Amalgam should be used where the decay can be thoroughly removed, and the cavity prepared with strong, smooth edges, and good undercuts or retaining grooves.

Silver nitrate is a valuable agent in saving the deciduous teeth, but is objectionable to many on account of its color.

On account of the difficulty of properly capping an exposed pulp in a deciduous tooth, the operation should seldom be attempted. It is better to devitalize the pulp and remove it. It is perfectly safe to use arsenic for this purpose, but it should be used carefully and sparingly, keeping in mind the probable extent to which absorption of the roots has gone. Prof. Dunbar advises the use of aqua ammonia for devitalizing temporary teeth, by applying it on a pledget of cotton in the cavity, one or two applications being sufficient in most cases. After removing pulp fill the canals with a paste made by mixing iodoform and glycerol to such a consistence that it can be readily applied on a probe. Fill pulp chamber with "temporary stopping" and the cavity with cement, gutta-percha or amalgam, according to indications. If absorption of roots occurs the iodoform in the canals will not interfere.

Alveolar abscess should be treated the same as in permanent teeth.

Prophylactic treatment lies more in the hands of the parent than it does in the practitioner, but should be strongly urged by the latter upon the former.

ALL SORTS.

Surgical Treatment of Alveolar Abscess.

In opening an abscess the surface should first be carefully cleansed, and other antistptic precautions observed. By this I mean that all instruments should be antiseptically treated.

The first step, then, in our operation would be the cleansing of the surface with hydrogen dioxid, followed by a small injection of a five per cent. solution of eucaïn; an incision is then made at a point on the gum immediately overlying the apex of the affected root, with a pointed bistoury thrust down to the bone—a good-sized incision should be made. The bleeding is then encouraged by the use of hot water for a few minutes, when a pellet of cotton, which has been dipped in a solution containing one or two per cent. of cocain and antipyrin four per cent., is then laid against the periosteum at the bottom of the cut. In a few minutes bleeding will cease, when a spear-drill, driven by the engine, is passed through the bone into the tissue of the apical space.

Any bleeding which may occur is encouraged as above mentioned. For washing incisions and the abscess in such cases there is no agent more acceptable than a twenty per cent. solution of phénol sodique, it being both sedative and antiseptic. A fair-sized round bur is then used to cut away necrosed bone if any is found.

If it is found necessary to excise the end of a root, a small fissure-bur is used and the root rounded, leaving no rough edges.

The wound is now cauterized with a fifty per cent. solution of zinc chlorid, and the cavity loosely filled with boracic acid gauze, your patient being seen every day, and less gauze inserted at each dressing as granulation progresses.

The time required for healing is from four to ten days, according to existing conditions. An antiseptic mouth-wash should be recommended in addition to the above treatment.—L. MEISBURGER, *Cosmos*.

Aristo-Paraffin Wax for Root-Canals.

Mix the aristol and paraffin by application of slight heat and by means of a spatula till the mass assumes a dirty straw color. This mixture will not deteriorate with age, and can be kept in a glass or in a pasteboard box. Paraffin wax as found in commerce is a more or less

impure hydrocarbon, but it will not volatilize unless raised to a high temperature.

After the dam has been applied and the canal has been sterilized and prepared as usual, it should be desiccated thoroughly by use of chloroform or alcohol with hot-air syringe, or by use of a root-canal drier. When this has been accomplished, roll a cone of aristo-paraffin and place in the canal, and with a heated root-drier or other pointed instrument touch the wax, when it will fill the canal by capillary attraction.

When the canal is filled, to all appearances, the material can be forced up through the apical foramen by means of a round-head burnisher and pledget of cotton or bibulous paper, or by twisting cotton around the sharp point of a plugger, when by the slight irritation evinced by the patient for the instant it will be known that the canal is filled. Experiments with this preparation on extracted teeth demonstrate through what surprisingly minute foramina it can be forced.

The advantage of using aristo-paraffin, where the foramen is large, is that, if it is forced through the foramen, it will not produce sufficient irritation to cause or continue an abscess, but be absorbed by the tissues, which advantage can hardly be claimed, righteously, for any other filling of the same value in other respects. When the canal is thus filled the bottom of the cavity should be covered with cement, and the filling completed as conditions indicate.

Between sixty and seventy cases of abscessed roots have been treated and filled in this manner, from one to three years' standing, and there has been but a single case of recurrence of apical tumor, which was caused by an impacted third molar.—H. B. HICKMAN, *Cosmos*.

Method of Taking Measurements which makes the Trying in of the Unfinished Case Unnecessary.

The length of the upper lip is marked in the wax if it is to be an upper denture, and the lower if it is to be a lower denture; also mark median line. The base-plate is then removed from the mouth and placed upon the model, and this in turn placed upon an articulator. A piece of medium stiff paper, about one inch in width, is then cut to correspond with the line drawn for length of lip, and with pencil mark median line on edge of paper. Let the paper extend up on the model and mark upon the model edge of paper, so that paper can be placed back in position when base-plate is removed, to be replaced with one of wax. As a general rule, the incisive edges of incisors fall about two lines below the lip, or a little less than one-sixteenth of an inch. Those of the lower jaw

do not show quite as much. The lower edge of the paper will guide you in placing the incisive edges of anterior teeth, also will show whether the patient closed the right distance into the wax, and the articulator can be opened or closed, so that the model or teeth of the opposite or opposing model from the one which the denture is made will come into position with the edge of the paper, which will be the correct position for the screw of the articulator to be set. The paper should always be marked on the model upon which the denture is to be made; or, in other words, do not make the mistake of marking the paper on the model of the upper jaw when a denture is to be made for the lower.—M. L. FAY, *Cosmos*.

Care of the Eyes.

We have only two eyes. Glass ones do not take their place. We could better, as dentists, get through our duties without our legs. They are the precious windows of the body. They are the very source and center of our daily existence. Without them we are as dead to the dental practice as if we were in our coffins. Yet the reckless way which they are being abused in our time is suggestive of the intensity of the struggle for existence. In sun-light, in shade, under gas-light, electric-light, etc., all day, far into the night, even on the one day of rest, many dentists now demand their functional strain, until the penalties come—head-aches, eye-aches, their failure of sight; in some cases total blindness. It is a pretty severe price to pay for competition, and for the sake of the dollar. The dollar made that way is far from “almighty.” Young men are now wearing glasses. Most of them are justified in their use. But why do they need them?—*Dom. Journal*.

Tooth Restoration by Means of a Crown.

I am well aware the placing of a porcelain facing or a gold crown is nothing new. It is the easier way of doing the operation, and where it can be best applied, that I wish to call your attention. We all have occasion to observe the frequent irregularity of the lateral incisors, being inside the arch, usually a short tooth locked back of central incisor and cuspid, a condition of difficult regulation. “What can we do to supply this tedious regulating operation?” The answer is a porcelain facing on a gold crown, restoring the contour of the arch, all done in three hours’ time or less, and you can readily see how you can extend the use in any and many similar conditions with other teeth out of contour of arch. A

description of whole crown, briefly stated, is this: For the use of all crowns, and would, from experience, recommend No. 28 gauge gold. Prepare your tooth to be crowned in the usual way of trimming, except the buccal side of tooth. This side grind as much as you feel safe in doing, fit your crown, and you are ready to place the porcelain. Select a tooth known as a short bite with a long appearance, and bevel your porcelain to fit bevel on crown, allowing pins to come on the cusp portion of crown, invest, and with a snip or ball of coin gold to make inside cusp, leave the pins long and do not bend them down on backing, as they help you make the outside cusp. Tip your porcelain with No. 28 gauge gold. Solder and finish as usual. You will readily appreciate the point I make of placing the pins on the cusp part of the tooth instead of having the pins come about the middle of crown for the purpose of soldering.—F. M. ROOD, in *Cosmos*.

Prophylaxis in Bridge-Work.

There is probably no class of work that our profession is called upon to do that requires the careful diagnosis, combined with artistic taste, and prophylactic measures, necessary in successful bridge-work. Almost any tooth can be filled or even crowned, and the case dismissed without further thought, or future attention, on part of the operator. When a plate is fitted accurately, and articulated properly, the dentist's work is done; the patient is capable of cleansing and keeping in order without further aid from the dentist except in case of accident. With bridge-work, however, all is different; comparatively few of the cases presented are suitable for this work at all—either fixed or removable. No conscientious operator will insert a bridge in a mouth that is a stranger to the modern conventionalities of brush and pick—knowing full well it would receive no more courtesies than older residents. Neither would he heap a double burden on piers already half undermined by pyorrhea or disease of any kind. Common sense teaches him that such members must be gently cared for and nursed back to health in order to be saved and made useful at all, and any additional weight or work put upon them only hastens their loss. He will refuse to span them from cuspid to third molar, even on perfectly healthy teeth, or do it under protest, even though it may be a mental one. He knows any bridge on a curve from bicuspid to lateral or central is foreordained to a speedy collapse. So it is readily seen that the field for successful bridge-work is quite limited. Yet within its proper sphere no more artistic, useful or satisfactory work appears in any oral cavity. After a thorough and careful diagnosis of the case you decide that a bridge is indicated; the problem is only half solved. If, perchance,

the piers are parallel, or nearly so, your case may have a long and useful career if properly constructed and adapted to tissues both hard and soft. But if they stand at different angles you may, as I said in a former article, take this for a rule: "A bridge is ill-fitting in proportion as the piers diverge from the parallel; consequently the length of its life and usefulness can be measured by the same rule. The piers in a majority of cases should be devitalized and roots filled. Then, after shaping properly and fitting crowns, the subject of replacing the lost organs comes up. I mention crowns only as attachments, as bands, lugs, open faced crowns etc., have long since been discarded by careful operators, except as temporary expedients. The dummies may be all porcelain, all gold, or a combination, as the case seems to indicate. If not conspicuous, or entirely hidden from view, the all gold, resting on or saddling the ridge, is probably the strongest, cleanest and more nearly restores shape and contour of lost organs than any other form, unless it be all porcelain, constructed in a similar manner. But here care must be exercised. If it rests too firmly on the ridge tumefaction may ensue. If it does not rest on a ridge it is a source of annoyance to the patient, as food is sure to lodge in any pocket. The saddle resting properly on the ridge, seems to have given the best satisfaction. When the case is ready for insertion, many of our best authorities recommend that it be fitted and worn a day or two before finally cementing in place. When you are satisfied all is right, set permanently, being careful that the piers occlude normally, and dummies but slightly. Care should be taken in removing all excess of cement from under and around bridge, as any left will cause irritation until expelled. This seems but a rehash of what most old and careful operators are doing daily, and may be of but little interest to them; but may still furnish a point now and then to some who have not had so much experience, and be appreciated by them. Arriving at this point, the average bridge worker is through with the case, except collecting his fee. The patient is dismissed, and leaves the office with the idea that so far as that bridge is concerned, he never needs see his dentist again, as it will outlast anything else in his mouth. This, I think is a vital error. In most cases the bands do not fit anywhere near accurately, no matter who makes them, and in time the cement washes out, irritation ensuing. The case cannot be removed and cleansed by the patient; minute particles are sure to lodge under saddle, between teeth and in all angles. The patient does not and cannot keep it clean, any more than he can his own teeth, which all agree need the dentist's care at least yearly.

In my opinion every bridge case should be seen by the dentist once in six months; cleansed on every surface, with floss, pumice, washes,

etc., and put in as perfect shape as the operator is capable of; by so doing, you add greatly to the life of the case, show to your patient your interest in him and in your work.

No patient will leave your office without a sense of gratitude, knowing you have their interest at heart. Your work will be much more lasting, and infinitely more satisfactory. Again, I would urge you to take no step in bridge work without due deliberation; but when you have put the case in place, as the best sample of your handiwork, do not forget that it will need your watchful care to add to its usefulness and beauty, remembering the old adage, that "Little things make perfection, but perfection is no little thing."—F. F. FLETCHER, in *Dental Review*.

Slightly Acid Mouth-Washes Deleterious.

If the alkaline fluids preponderate in the mouth you do not need a mouth wash. Whenever the secretion from the salivary glands is slightly alkaline all the time you do not need a mouth wash, as the teeth will not decay, and the objection to any mouth wash containing formic or acetic acid is the exceedingly diluted solution of these acids, because you take one-tenth per cent solution of acetic or formic acid, place it into a tooth and leave it for thirty days, it will leave a finely powdered surface over the whole, showing that it acts energetically on the inorganic material of the tooth. If you place a tooth in a forty per cent solution of formic acid at the end of thirty days it would only be dull, not destroyed.—A. W. HARLAN, *Dental Review*.

Systemic Treatment as an Aid in Correcting Irregularities in Children.

Systemic treatment has not been dwelt upon as much as it deserves. The regulation of the teeth and preservation of the interdental spaces are also important factors. I had a case in my practice of a little girl, nine or ten years old, where the most alarming state of the teeth was present. It seemed hopeless that she should escape a severe course of tooth-regulation. She was frail and anæmic, and I concluded to prepare for the inevitable by building up the system. I gave her beef extract, syrup of hypophosphites, insisted that the child should take plenty of exercise out of doors, and above all, I directed to be rubbed into the child, morning and evening, large quantities of cod-liver oil. To my surprise in three to six months the teeth seemed to move like magic, the jaws spread out, and in the course of a year and a half all danger of

tooth-regulation passed away. Of course, nature might have come to the rescue without the treatment, but it seems to me that the treatment in this case was partially responsible for the change.—DR. HEAD, *International*.

Items for Consideration.

In the *American Dental Weekly*, Dr. B. F. Arrington gives the following timely hints:

"Scrupulous and appropriate cleanliness of person, office and instruments, daily observed and religiously practiced, will very greatly diminish necessity for use of disinfectants, sterilizing agents, etc., to check progress and destructive features of the harmless little armies (much magnified) of microbes, bacteria, and the like, seemingly a great terror to some dentists, who would doubtless be more practical and useful as dentists if their thoughts and energies were applied to something larger. It is best never to "strain at a gnat and swallow a camel." The question is yet to be settled, whether the presence of such minute animate matter is designed for evil or good. If for evil, we are gone up, unquestionably, for there is no getting at the fountain-source to exterminate. They are legion, and everywhere; always have been, and possibly always will be. They are of God's creation, have a service to perform, and while performing merit a living; let them have it. Teeth and gums treated and teeth filled forty and fifty years ago—long before the germ and microbe theory, sterilizing instruments, etc., were sprung and advocated, as for some years past—was a success, and no evil consequences followed any more than at present.

Never use more remedies in practice than requisite, and never persist in the use of a remedy as superior to others until you have compared and faithfully tested for merit.

Use gum-lancet freely for relief of children during teething period. Much relief will be afforded and death prevented sometimes.

Never cut around teeth or roots to be extracted if forceps can be applied without it; but if you have to cut, cut for effect, and be sure to get a secure hold before attempting to extract, never losing sight of the fact that in the operation of extracting teeth a *rough success* is more appreciated than a *delicate failure*.

Never attempt the filling of proximal cavities until ample space is provided; and in filling deep cavities with gold or amalgam be careful to protect base of cavity with some reliable non-conducting material, to avoid injury to pulp and consequent discomfort.

The preparation of cavities for any filling material should be the

same in every particular, and the same care in introduction of material and finish of same should never be slighted, lest evil consequences should follow.

The desire and ambition of every dentist should be excellent results, if possible to be attained, not only in filling, but in every service rendered for health and preservation of gums and teeth.

Never stuff cavities with amalgam or gutta-percha at the commencement of filling; small quantities carefully manipulated for perfect adaptation and solidity, and to insure freedom from leakage, is safest practice. All filling material should be carefully inserted and finished.

Never rush operations to make rapid headway; if you do, failures and complaint may follow quickly.

In the use of gutta-percha or amalgam strive for best results possible, as in the use of gold. You will preserve more teeth and will think better of yourself as a dentist, and your patrons will think better of you.

In shaping cavities, nearly perpendicular walls, with slight under-slope, is surest guarantee for retention of fillings.

Never jeopardize pulps by making retaining pits. A cavity rightly shaped will hold filling without the aid of retaining pits, therefore the use of them should be discarded.

In rendering service for preservation of teeth always consider the interest and comfort of patients more than self; otherwise, much you do will be unreliable and will cause dissatisfaction.

You can and may safely venture to vary in selection and use of material, but manipulative ability and skill must be applied the same under all circumstances and conditions, or there can be no dependence in service rendered.

Never attempt to crown or bridge on roots defective at apex; if you do, it will be safe to predict failure, and evil consequences will follow in a limited period, and patients will realize that there was dishonesty or want of good judgment and skill, either of which would prove hurtful to the dentist and lowering to the profession.

Integrity and skill must couple in all work for preservation of teeth; the principles of the "golden rule" should guide.

Never advocate a principle in theory, or any line of practice as exactly right and correction or improvement impossible, but think and act independently and strike out boldly, analyzing and experimenting for results and facts; and if obtained results, repeated and well established, conflict with previous teachings and preconceived ideas, hold to results, advocate and herald them, and practice accordingly. It will be better for you, better for patients, and better for the profession, for it is the only sure way to lift out of old ruts and make successful progress.

If you have commenced practice inflated with the idea of high prices and rapid gains, be undeceived, for there is only so much for you, if you follow, as you should, an honest professional line of practice. Nine out of ten (a fair average), if endowed with fair attainments and skill and becoming professional bearing, and close application to office duties, may reasonably hope to meet expenses (legitimate) annually—very little, if any, more.

Ten years hence the prospects for profits will be less encouraging than to-day, and many, possibly, will wish they had never embarked in the practice of dentistry."

A New Idea.

To lessen the weight and to economize in bridge-work are two most desirable considerations.

We believe Dr. Thomas Crenshaw, of Atlanta, has solved both problems. In all suspended gold crowns, *after* reinforcing same, select a porcelain tooth corresponding in size to the class desired. Wrap this with thin sheet platinum, first having coated the platinum *inside* and *out* with the proper flux. Place small bits of 22-k. solder in bottom of gold crown, then place the platinum wrapped tooth in the crown with solder liberally arranged between tooth and crown. Invest and direct the flame at the *bottom* of the investment. This attracts the solder to the cutting edge or crown surface, insuring perfect contact at all points. We have had the pleasure of seeing this practically demonstrated and are impressed with its two great desideratums—economy in gold and a minimum of weight, without impairing in the least the strength of the bridge.—J. A. C., *Dental Weekly*.

Removal of the Inferior Dental Nerve through the Mouth.

Dr. Alexander H. Ferguson (*Chicago Medical Reporter*, May) reported to the Chicago Medical Society, on April 13th, a case of neuralgia, in which all of the three branches of the nerve were affected. The tongue and ear were also involved. Medical treatment had proved useless. The inferior dental nerve was then removed in view of the removal of the Gasserian ganglion, a much graver operation. The head was thrown well back, and a gag put in the mouth. The distribution of the inferior dental nerve was then cut at its exit and from the mental foramen, and dissected out at that point and cut as it began to divide in its distribution. A half-inch trephine was then used on the jaw where

the last two molar teeth were situated. After the gums had been separated longitudinally and the soft parts pushed to one side, a trephine was applied on the inferior maxilla and the nerve exposed where it traveled through the jaw. An incision was made parallel to the ascending ramus of the jaw and a little to the inner side thereof, cutting through the mucous membrane, and by blunt dissection the nerve was found as it entered the foramen on the inside of the jaw, a good guide being the sharp spiculum situated in that part. After the nerve had been severed at the mental foramen and exposed at its entrance into the inferior maxilla it was extirpated *in toto* by pulling it out from the middle of the jaw, and then hooking it from the upper incision until it hung loose, then following it up as far as possible and cutting it. In this procedure the artery was injured and the wound had to be packed firmly. The packing was left in for three days, then removed. No hemorrhage followed. The patient was relieved instantly and has remained perfectly free from pain since.

Impressions.

Dr. I. P. Wilson, in an article in *Items of Interest*, gives some good suggestions, among others are the following;

“A set of teeth made from such an impression with a huge ‘air-chamber’ may be made to adhere so firmly that it can only be removed with difficulty. In such cases I have heard dentists say with an air of triumph, ‘How is that for a fit?’ and the poor deluded patient would think, perhaps, that was a splendid fit. Such a plate cannot be worn with comfort. The sensation ensuing must be similar to that experienced in the process of ‘cupping.’ Indeed, the same result is sometimes produced, and I have more than once known of a blister being drawn by this kind of a suction cavity. If the patient has the fortitude to endure this drawing process for a considerable length of time, an abnormal development of tissue will fill the cavity. It is only necessary to have a fair impression of the central part of the roof of the mouth to secure the results referred to above.

“In my early practice, more than thirty years ago, I used wax exclusively for taking impressions. I also used large air-chambers; hence I have an experimental knowledge of what I am writing.

“I believe that plaster of Paris is used almost exclusively at the present time for full upper sets, while other preparations, such as wax or modelling compound, are still used by some for full under dentures and for all partial sets. In my own practice I use plaster of Paris exclusively for both full and partial plates.

MANAGEMENT OF SPECIAL CASES.

"The condition of the mouth is the first consideration, and should be carefully examined before an impression is taken. If the texture of the gums, the hard palate, and the alveolar ridge are found to be in a normal state, the taking of an impression is greatly simplified. But if there is a sponginess of the anterior portion of the alveolar ridge, with a hard bony structure along the median line, the case becomes more difficult to manage. An impression cup that will pass freely around the gums should be selected. If the arch is high, a little soft wax should be placed along the posterior margin of the cup before introducing the plaster, which should be mixed thick enough to produce slight pressure upon the soft yielding tissues. In some cases we find the anterior portion of the gums as soft and yielding as the muscles of the cheek. If the plaster is mixed too thin, and the impression is taken without any pressure upon these soft parts, the plate, when completed, will rest upon the hard palate, with no support upon the spongy gums. Such a plate will rock because of uneven pressure. The impression should be so taken that the soft as well as the hard tissues will be in a measure unyielding when the dentures are in place. Of course it will not do to force the spongy gums back in taking the impression so that they will act as a spring upon the plate. Either extreme should be avoided. When the impression is in place the lips should be raised gently, to expel the air that may have been shut in, after which they should be drawn down with sufficient force to mark the folds of mucous membrane in the impression, otherwise they will act as a spring in dislodging the plate.

"When there are under-cuts in the gums, care must be taken by some means, to force the plaster into the recesses, and then before crystallization has fully taken place the impression must be removed, which will usually break into a number of pieces, but these may be put together again like a broken dish.

"Sandarac varnish will unite the parts perfectly. If the plaster becomes too hard, a knife may be used in cutting grooves and breaking into sections the binding parts.

"Taking impressions for partial sets is much more difficult, and an accurate impression is an absolute necessity. An impression taken with any material that will yield or bend without breaking, is unreliable and will result in an ill-fitting plate.

"Plaster should be mixed thick enough to hold to the cup when turned upside down. A large number of impression cups of various sizes and forms should be possessed by every dentist.

"In some cases we find a bony prominence in the roof of the mouth

which is hard and unyielding, and unless provision is made for this objectionable feature of the case, a failure may be expected. Very soft plaster should never be used in taking such impression, but plaster stiff enough to produce some pressure upon the soft parts involved.

"Judicious scraping of the model where the parts are soft or a layer or two of heavy tin foil over the hard parts will help obviate the difficulty.

"When the bony prominence does not extend back to the soft palate, the difficulty is easily remedied, by forming a thin suction cavity over the entire bony surface, so the plate will not come in contact with it.

"Before taking an impression the mouth should be rinsed thoroughly with cold water, and if the saliva is thick andropy, salt should be added to the water.

IMPRESSIONS WITHOUT CUPS.

"It becomes necessary occasionally to do away with an impression cup in partial under sets, especially when any of the anterior teeth are to be supplied. In such cases I frequently take the impression only of the lingual surfaces of the teeth and gums, allowing the plaster to pass into the places of the missing teeth, but not through to the labial side. This may be accomplished by carrying the plaster on a spatula to the desired location. I prefer, however, to take a roll of wax and press against the lingual surfaces of the gums and teeth, then remove it, and dress it down, forming a deep longitudinal concavity in the wax next to the teeth, which I fill with plaster and put into place against the teeth. Usually the wax will come away from the plaster in removing it from the mouth, but body enough is left to the plaster to push it back into the mouth, frequently breaking it into several pieces, which may be readily glued together. This will give a perfect impression of the parts to which the plate is to come in contact, and the most satisfactory results are obtained."

Precautions a Dental Operator Should Observe.

Considering the well-recognized contagious character from mucous patches in syphilitic mouths, it is remarkable that there are so few instances on record of the infection of dentists, whose fingers are continually bathed in these secretions. It is undoubtedly due to the great personal care of the hands necessary in the profession. Physicians and surgeons have been much less fortunate, and numberless instances are on record where they have acquired chancres on the fingers from mucous patches. I myself have had over a dozen thus affected under my care.

It is to be remembered that an abrasion of the surface is necessary for infection, so that these and even hang-nails should be carefully

guarded against. Illustrations have occurred where even momentary contact of an abraded surface has sufficed to acquire the disease, even where careful cleansing has taken place immediately afterward; too great care cannot therefore be exercised in having the hands free from any raw places through which the poison could gain entrance.—L. D. BULKLEY, in *Cosmos*.

Cervical Adenitis.

Attention has been drawn to the relations existing between cervical adenitis and the condition of the teeth of the inferior maxilla. Sub-maxillary glands of dental origin have generally been treated with resolvent ointments in ignorance of the primary cause and consequently with but very little benefit to the patient. Certain teeth, healthy in appearance, frequently produce adenitis, even at a considerable distance, as may be proved by seeing it disappear after avulsion of the offending tooth. Disease of the tooth seems, according to Dr. Marchundese, to be the most frequent cause of this affection. Where the molars of the upper jaw are affected, the inflammation is propagated in parotid ganglions by the frontal group of lymphatics.—*Paris Cor. Med. Press and Circular*.

Is Nasmyth's Membrane Modified Cementum?

Whilst examining some human teeth after they had been stained, my attention was drawn to a staining upon the surface of the crown and root, and on carefully grinding the tooth down we found a line of color on the exterior of the enamel and cementum: this stained portion was slightly thickened at that point where the cementum overlaps the enamel at the neck of the teeth, and was continuous with the periosteal membrane of the root. It would thus seem as if Nasmyth's membrane were a continuation of the membrane covering the cementum, and not modified cementum.

If the section so made is carefully examined after it has been mounted in balsam, the following will represent what appears—unless the membrane has been rubbed off in preparation—*exterior* to the enamel and cementum a layer of stained tissue, varying in thickness but apparently continuous from the cutting edge of the tooth to the apex of the root. This membrane appears different from the cementum, as the latter does not take the stain, whilst under the stained portion the cementum appears to end by slightly overlapping the enamel.

As a further proof of this, if a tooth is placed in the acid solution,

"as suggested by Mr. Hopewell Smith for the preparing of sections by decalcification," the membrane may frequently be peeled off from the enamel and cementum in one continuous piece; tissue so obtained takes the fuchsine stain very thoroughly, and there appears no difference in structure between that portion covering the enamel and that covering the cementum. I have found wisdom teeth or teeth extracted for regulation purposes are best for showing this membrane, and to stain prior to grinding the hard section down the tooth should be placed in an alcoholic solution of fuchsine or any similar dye for some weeks or even months before the examination.—D. E. CAUSH, *Jour. Brit. Assn.*

An Improved Gutta-Percha Stopping.

The utility of gutta-percha depends upon the elimination of what has been shown to be deleterious in gutta-percha, namely, the resin. The resins are soluble in spirit, pure gutta is not: therefore if we dissolve gutta-percha in any of its solvents, and treat the solution with spirit we precipitate pure gutta and get rid of the resin. Pure gutta contains all the good qualities of good gutta percha in an enhanced degree, and therefore if we can utilize this substance to the best advantage we are getting the most we can out of gutta-percha. The two qualities in a gutta-percha stopping ought to be toughness and hardness. The gutta-percha gives us toughness, but it swells; the mineral admixture gives us hardness, but it tends in excess to eliminate the toughness, which, in my opinion, is the best quality of the stopping. Pure gutta is so extremely tough and tenacious that it will bear a considerable admixture of mineral matter, which hardens it and controls the tendency to swell in the mouth, without detriment to the stopping. It is also harder than gutta-percha to start with, so that by using the following formula one gets what is, in my opinion, the best of both qualities:

Pure gutta,	50 parts
Finely levigated silica,	30 "
Oxide of zinc,	20 "

The gutta should be gradually heated and the powders added in small quantities at a time. I find the best way to use it is to gently warm a portion sufficient to fill the cavity over a flame, then roll it in the fingers to an elongated shape the diameter of which is less than that of the cavity. Then heat a round-headed burnisher and press it to one end of the cylinder, which will adhere to it. Then gently heat the stopping over the flame, taking care to heat the burnisher as little as possible; carry to the cavity and press home. The round head of the burnisher may easily be

detached by rotation. If adhesion to the cavity wall be desired, the stopping must be heated to a higher temperature, or dipped in eucalyptus oil, and the oil then volatilized by heat, leaving a sticky surface. In my opinion gutta-percha stoppings should not be trusted to remain by adhesion but by judicious undercuts. To prevent dragging when the filling is being trimmed off, the trimmer should be fairly hot, the filling being trimmed off towards the cavity-wall. Accurate gauging of the amount of stopping to be used saves much trouble. Oil of eucalyptus or chloroform may be used if necessary to trim the edges.—W. RUSHTON, *British Journal*.

Upper Impressions.

You are directed to scrape the model where the roof of the mouth is soft, to insure a good adaptation of the plate; but even this will not suffice where it is desirable to carry the plate back to the full extent of the hard palate, for the reason that the tissue is soft, as a rule, across the entire vault, any scraping will be guess-work. The impression taken in plaster will mark this soft tissue very nearly in its normal position—a condition undesirable, because a plate ought to fill up very snugly just at this point. Now for the point under consideration. A piece of softened wax about half an inch thick, placed across the posterior part of the impression tray and pressed to place in the mouth, will push the soft tissue up to where there will be a solid roof for the plate to rest against. Now, with this wax left in the cup, sufficient plaster is added and the impression taken in the usual way. The atmospheric pressure thus obtained is something remarkable, as evidenced by the resistance met in removing the impression and in the fit of the plate.—A., in *Dental Weekly*.

About Impressions.

The impression upon which we are going to form the future denture is an essential to success, and the subcutaneous tissue must be considered in order to obtain usefulness of a denture. I think that most operators believe that plaster of Paris always gives the best results. We get a facsimile of the mouth upon which to form the denture, and from this make a negative which must be a success. In some cases the tissue is of such a character that it must act differently with the plate in the mouth from what it does with the plate out of the mouth. In other words, we have a soft condition of the mucous membrane, physically healthy and yet springy. I have found in these cases that it was absolutely impossible to

get a perfectly satisfactory denture made from an impression taken in plaster of Paris, while with the modelling compound, particularly the hard variety, these cases would be invariably successful.—H. C. REGISTER, *International*.

Odontalgia After Pulp Extirpation.

One case I had especially was very perplexing, and the trouble hard to locate. First upper molar with an exposed nerve, which it was deemed advisable to devitalize, was treated and filled. The process of devitalization was accomplished with arsenical paste, the nerves extracted and the roots filled in the usual way. Some weeks after the tooth had been filled, the patient returned complaining of pain and sensitiveness in the tooth. Supposing it to be a case of pericementitis, which would probably pass away from local applications, the gum was accordingly painted with a preparation of iodine. Patient again returned with no relief and complained that even warm tea was unbearable. Knowing this tooth to be devitalized the first thought was that it must be some other tooth which had set up a reflex pain. Careful examination did not reveal any trouble in the other teeth, and repeated tests proved conclusively that it was either this filled tooth which was causing the trouble or the patient was affected with an abnormal imagination. The filling was removed and the roots opened, which revealed the fact that there was remaining in the posterior buccal root the smallest bit of a nerve fibril. This was at once removed, the tooth refilled and remained comfortable ever after. It seems yet a mystery how such a small bit of nerve substance could have caused such acute pain from thermal changes, being protected, too, by the overlying tissues of alveolar process and gum.

If practitioners would only take the trouble, many cases of interest might be cited as incidents of office practice.—H. H. JOHNSON, *Dental Weekly*.

How to Make Flexible Drills.

When it is necessary to enlarge the nerve canal for the purpose of cleansing and treatment to and beyond the apical foramen, I have been more than fairly successful in doing so by the use of flexible drills made of mandolin wire.

As these drills are not on the market, a description of my method of making them may not be amiss.

The wire is cut in suitable length wherein it is drawn taut and flattened to about one-half its original diameter. It is then removed and

one end held in a pin vise and with a pair of pliers is twisted its entire length. The uniformity of the twist will be according to the skill. The flattening and twisting is accomplished without drawing the temper.

A section $\frac{3}{4}$ or $\frac{7}{8}$ of an inch is cut and soft-soldered into an engine-bit having a socket drilled to receive it and is then sharpened.

These drills are sufficiently hard to cut dentine and are so flexible that they will follow an opening made with a Donaldson broach, and will enlarge the canal sufficiently to admit a Gates-Glidden it desired. I have had them come unsoldered, but never had one break in a tooth.—
A. E. MATTESON, *Dental Review*.

The Vascular Supply of the Pericementum.

In a valuable article in the *Items*, Dr. H. H. Burchard speaks of the blood supply of the pericementum, as follows:

"The evidence therefore is that the pericementum, apical and lateral, is supplied with blood from arteries which enter the apical space in several branches of the dental arterial trunks, and in addition receives a freely anastomosing supply via the alveolar walls. The vessels of the pulp in several trunks are mainly from the dental trunks proper. In event of obliteration of these latter trunks, the anastomotic circulation, both through alveolar walls and by continuity at the alveolar margins with the maxillary periosteum, might be sufficient to keep up the circulation in the pulp.

Until further evidence is brought to light, I believe the neural supply of the pulp to be from branches of the dental trunks proper, although it is unquestionable that nerves pass over the alveolar rim into the pericementum."

About Solila and other Crystal Gold Preparations.

In an interesting article in the *Items*, on this subject, Dr. Sachs, of Breslau, Ger., says:

"It is an acknowledged fact that the introduction of the gold into the cavity, and its condensation, is the part of the operation which is least difficult and requires the least time. Far more difficulties offer in the opening, cleaning, formation of the cavity, and drying of the tooth to be treated.

RETENTION OF FILLINGS.

That these preparatory steps must be essentially different for a filling with crystal gold, than for one with cylinder gold, or leaf gold, is only

referred to in one point. They say, filling with solila requires no retaining points, only slight undercuts, even the roughness produced by the rotation of a cross-cut bur on the wall of the tooth suffices. In my opinion retaining points for any other gold preparation are not only superfluous, but even hurtful. They give an insufficient support to the filling, endanger the vitality of the pulp through a frequently occurring injury of the pulp on the one hand; and on the other, thermal irritations from the gold anchored in the retaining points are transmitted in a great measure to the pulp.

It is mere fancy and practically impossible, that the roughness produced by the cross-cut bur is capable of retaining a filling of gold in the cavity. A gold filling requires a cavity for retention, the walls of which must extend at a right angle from the bottom of the cavity. If this shape cannot be formed, slight undercuts must be made in the two strongest walls of the teeth. The slighter these undercuts are, the easier the introduction of gold, the more resisting the tooth.

FAILURES OF SOLILA GOLD.

Gold is by no means a plastic material like cement or rubber, which attaches itself to a rough surface. It must be anchored in the cavity after the swallow-tail system. If large pieces of sponge gold are used, the filling is sure to become defective. It is peculiar to this gold that it gets condensed at once under pressure, the surface of the separate pieces becomes hard, whilst the inside remains spongy, and this fault is not discovered until later on the failure shows the cause very evidently.

Fillings outside the mouth in steel matrices, pieces of ivory or extracted teeth are perfectly inadequate proofs. Attempts were made to show the density of the gold, and how closely it fits the walls of the teeth by cutting through one of such phantom fillings, but I consider such proofs quite worthless. The pressure applied in condensation can be used only to a certain degree with living patients.

The homogeneity of crystal gold can only be attained if small pieces are introduced into the cavity, which are most carefully condensed by hand pressure and mallet strokes before the next piece is put on. To attain such universal compactness, requires much more time according to my experience than the making of a filling out of unannealed gold cylinders to cover the bottom of the cavity and its side walls with a layer of strong annealed leaf gold on the surface. Whilst crystal gold stays upon pressure wherever it is pushed, the unannealed gold cylinder has the priceless advantage of spreading under hand pressure. The plugger acts as a wedge and forces the gold laterally towards the walls, by which a faultless adaptation to the tooth-substance is effected.

Crystal gold must be heated red hot, and then cooled again before the introduction into the cavity, so that the patient does not suffer unnecessarily. This heating and cooling requires plenty of time, and interferes to a great degree with the quick working of it. It is a well known and undisputable fact that non-cohesive gold adapts itself much better to the walls of the cavity, and agrees far better with the tooth-substance. All experts confirm the experience that, along the margins of fillings with non-cohesive gold, a reappearance of caries occurs very rarely, whilst we are often called on to repair defects along margins of cohesive gold fillings.

CRYSTAL GOLD FILLINGS NOT DENSE.

The adherents of crystal gold boast that the surface of it is harder than that of annealed leaf gold. This seems to me simply impossible. If the surface of a strong filling made of annealed leaf gold is well condensed in all parts, it is as hard as molten gold, and no chemically pure gold, as used for filling purposes, can be made harder. I cannot understand how gold consisting of microscopical small crystals can be more compressed by pressure than foil, which possesses the possibly greatest compactness through its homogeneous stratum. The facility with which gold can be made smoother on its surface with steel burnishers, and its surface more lustrous, leads to disappointment. The filling looks very beautiful, if the surplus, after the filling and condensing are finished, is ground off smoothly and it is polished, but after a few months it looks sadly rough (especially on masticating surfaces, if quickly filled), as though eaten by moths.

Another assertion is, that hand pressure is sufficient to condense the sponge gold—a mallet is unnecessary—yet nearly every author who gives us his opinions and experience on the application of crystal gold in modern times, says bashfully, “it recommends itself. One might finish the surface of the filling with leaf gold and a mallet.”

An important advantage in the working of this gold is said to consist in the abolishing of the mallet, which injures the teeth. Every exaggerated application of force in filling, injures the teeth, be it stroke of mallet or pressure of hand. If the strokes of the mallet are executed with intelligence, and correct adaptation to each occurring case, they have never yet injured a tooth. I look upon the mallet as an indispensable tool for producing a good filling of gold. He who injures the teeth with a mallet, is not sufficiently trained for filling teeth—sheer force does not succeed; knowledge, experience, joined to the necessary manual skill, and conscientiousness, are the conditions for good work.”

Hardened and Washable Plaster-of-Paris.

For the hardening of gypsum, a firm in Heidelberg has taken out a German patent on a process which apparently surpasses all those in existence, and furnishes very satisfactory results. Either burnt gypsum is prepared and mixed with the liquid named below, or else the finished articles of hot gypsum, or of mixtures of gypsum and other bodies are impregnated by painting with the fluid. The same consists of a solution of ammonium triborate in water. For this purpose, boracic acid is dissolved in warm water and a certain amount of ammonia is added, whereby a substance really soluble in water and deviating much in its properties from known compounds results. The saturation of the gypsum, or the painting of the plaster articles is carried out into the cold. The objects are subsequently rinsed off and dried. The surface becomes very hard after two days and insoluble in water, while the induration in the interior advances more slowly. By means of the fluid described, gypsum floors can be hardened and rendered more durable and impervious to the influences of the weather. Saturating with ammonium borate is said to be especially useful on exterior walls of buildings, etc. Experiments have proved an antiseptic action of the liquid.—*Scientific American*.

Pericementitis—Treatment with Cataphoresis and a Copper Electrode.

I wish to speak of the use of cataphoresis in the inflammatory condition of the periodontal membrane by use of the copper electrode. In all cases of acute periostitis I have invariably found it to give immediate relief, leading to a speedy cure. In cases of chronic soreness of teeth, as we sometimes find after the pulp has been removed and chamber filled, especially the cuspids, I have relieved many and I believe permanently cured such as have been filled to the apex. And as there are roots of some teeth, notably the buccal of the superior molars, and the anterior of the inferior, and sometimes in other teeth where there may be an extra root that it is impossible to find and which are left unfilled, in these cases where chronic soreness results I have found it invaluable not only for present relief, but in some cases, that I have had the opportunity to notice, months have passed without a return of the trouble.

My method is to use a point of copper similar to a root dryer in cases of inflammation. Before filling I place in the pulp cavity a saline solution, insert the point attached to the positive pole, using as strong a current as the patient will bear with comfort for about five minutes. When the roots are filled, and in addition to the above, I sometimes use an

electrode, shaped something like a mason's trowel—a flat piece of copper soldered to an electrode stump—laying cotton, saturated with salty water on the gum so that the copper will not come into direct contact with it, and apply as strong a current as the patient will bear for from five to ten minutes. The results will almost invariably be satisfactory.—S. T. KIRK, *Ind. Dental Journal*.

Antidote for Erosive Action Produced by Arsenic.

In the tincture of iodine we have a very reliable antidote for the erosive action produced in the soft tissues by arsenic trioxid. It has proved to be so certain and prompt in arresting the inflammation and ulceration caused by the accidental contact of arsenic with the gums or cheek that I regard it as almost a specific. I cannot say that I understand fully its *modus operandi*, but I can afford to use it empirically until its mode of action shall be explained if it continues to be as effective as it has been in my past experience. If other operators have used it in the same way I shall be glad to learn what the results have been.

It occurs to me that if those who use arsenic to destroy nerves estimate at their full value the terrible ravages that may be caused by it, and know how easily they may be arrested and cured, it is inexcusable, if not criminal, to permit a case to go on to necrosis of the bony structure.—A. N. DICK, *Med.-Dental Gazette*.

Imprisoned Tooth: an Obscure Cause of Cervical Abscess.

Alveolar abscess, whether in the acute stage or at a later period when a discharging sinus in greater or less proximity to the offending tooth is the source of complaint, although apt to be overlooked by a casual observer, rarely gives rise to any real difficulty in diagnosis. The situation of the abscess, the position and the direction of the sinus, the presence of a carious tooth, which is more or less painful or tender to pressure, will generally sufficiently indicate the nature of the case. I have met with two examples in which the diagnosis was rendered difficult by the presence of unusual conditions, and although they belong to a class with which dentists and surgeons are by no means unfamiliar, they are sufficiently uncommon to be worthy of record.

Case 1.—A woman, aged 25 years, had, for several years before she consulted me, suffered much from pains in her left lower jaw. In 1891 she had one of the molar teeth extracted and shortly afterwards an abscess formed which discharged itself through the cheek at a point mid-

way between the symphysis and angle. This abscess had been in the habit of closing, refilling, and bursting at varying short intervals ever since. Some months after the extraction of the first tooth all the remaining teeth on that side, including two which were quite sound, were removed, but still no improvement in the recurring abscess was effected. On the occasion of my first seeing the patient—viz., on March 14, 1893—the sinus was discharging and by means of a probe bare bone was discovered at its distal end. Within the mouth the edentulous gum looked and felt firm and sound, affording no indication of disease within. The patient having been placed under ether I cut down upon the face of the jaw making the sinus the centre of the incision. On exposing the jaw, a minute hole was discovered in it which, enlarged by means of a gouge, was found to communicate with a cavity of considerable size, and in the cavity, completely surrounded by bone, lay a bicuspid tooth whose crown was partly destroyed by caries and one of the roots of which was thickened and rough. This was removed, the cavity was drained and the wound was sutured. In the course of a few weeks all was soundly healed.—T. R. JESSOP, *Jour. Brit. Asso.*

Thread Cutting Pliers.

There is on the market a pair of flat-nose pliers designed for cutting a screw on the dowels of crowns, the better to secure the crown in the root, when either cement or gutta-percha is used for this purpose. Such a pair of pliers may be easily made by any dentist, as follows: A pair of flat-nose pliers are obtained. The temper is taken out of the noses by heating red hot. Holding the noses tightly together by pressing the handles together, a small hole is readily drilled between the noses, about one-fourth of an inch from the end. A screw thread is then cut in this hole, when the pliers are retempered. By placing the tapered dowel in this threaded hole within the nose of the pliers, and backing the dowel out, a thread is cut on the dowel. This may be done either before or after the crown is completed.—T. F. CHUPEIN, in *Office and Laboratory*.

Broaches.

A handle is not always necessary to a broach. In fact it can be manipulated better without one. The soft delicate touch to be had with the broach held between the fingers, is destroyed by the handle. Frequently for entering lower molar and bicuspid roots, the broach is found to be too long. With wire cutting forceps, cut the shank nearly all off,

leaving just sufficient to rotate the broach between the fingers. Handles are necessary when using canal cleaners with sulphuric acid, as this operation does not require that the broach should be rotated, but simply passed in and drawn out repeatedly. The handles that come with the Donaldson cleaner are admirably suited for the purpose. To remove a cleaner or broach from one of the handles, heat the broach slightly in a small flame; at the same time pull on the broach with pliers. To replace a broach in a handle, heat it in a small flame, holding with the pliers; touch the heated shank end to a small piece of shellac, slightly melt the shellac and press into the handle, cool with a drop of water from the finger.—*Amer. Dental Weekly.*

BRIEFS.

Tin as a Lining in Deep-Seated Cavities.—When caries extend to the bifurcation of roots, make a mat of two or three layers of tin, place it in the bifurcation and use it as a base in filling the rest of the cavity with amalgam.—*Amer. Dental Weekly.*

Formalin Should Never be Applied to the Surfaces of the Teeth, except the rubber-dam be in position, fitted evenly around the necks of the teeth, so that there shall be no holes whereby the mucous surfaces of the mouth may become exposed to the action of formaldehyde as it produces an ugly slough, not unlike that caused by arsenic.—*A. C. Hart, Med.-Dental Gazette.*

Lamp Wick.—Be careful that the wick of your annealing lamp does not become charred. The round wicks for annealing lamps are usually too large; they will give a better blaze if two, three or more strands are drawn from them before placing them in the burner. Trim the wick each time the lamp is used for annealing purposes. Really, an annealing lamp should not be used for any other purpose whatever.—*Dental Weekly.*

Impressions.—Do not use too much material when taking an impression. Select a cup to fit rather close, and put into it only enough material to cover the parts to be duplicated by the model.

There is no better way of taking a plaster impression than by first taking one in wax and enlarging it a little, except at the "heel," and then pouring in a small quantity of plaster and retaking the impression.—*Amer. Dental Weekly.*

A Peculiar Accident.—Dr. A. C. Cameron, of Hanford, Cal., reports a peculiar accident as happening while using a local anesthetic containing atropine: a fine spray of the anesthetic being forced backward beside the needle and striking him in the eyes. As atropine causes a sudden dilation of the pupil the Doctor was obliged to stop work until the effect of the atropine passed away and normal vision was restored.—*Med.-Dental Gazette.*

Extract Only where Necessary.—The idea of extracting teeth is too common. We must treat our patients as we find them; not as we would like to have them. It is much easier to make a denture where all teeth are extracted; but there are many cases where they are very valuable for clasping; and in the lower jaw, especially, it becomes of vital importance that they be preserved to give stability to the artificial teeth.—*Jas. Truman, International.*

To Make Artificial Teeth Look More Natural.—The artificial teeth of to-day are unnatural in that they are baked to yield a glistening appearance. A diminution of this high glossiness is what we should hope to attain. By dipping artificial teeth, prior to setting, into hydrofluoric acid, the surfaces become more lifelike. Select the color with reference to the complexion and age of the patient, and never permit the latter to lead you from the path of professional knowledge; rather choose teeth somewhat darker than you first conclude. The teeth always appear lighter when placed in the mouth than they do when on the wax base-plate.—*British Journal Dental Science.*

A Practical Method of Separation.—Many methods of separating teeth to facilitate egress to approximal cavities, and lateral movement in regulating have often been offered to the profession, but the most successful one I have found was suggested to me in a moment of impatience, by cutting off a small square piece of rubber-dam and rolling up between the thumb and forefinger. Any size can be quickly made in this manner, and by touching with a drop of sandarac varnish before stretching same between the teeth, crowding on the gum may be prevented. The ends may be stretched and then clipped off in the usual manner.—*Wallace Wood, Amer. Dental Weekly.*

Treatment of Sloughing Gums Due to Formaldehyde.—Should you be so unfortunate as to get formaldehyde on the gums, and the patient returns with a slough, first cleanse with 3-per-cent. pyrozone, remove any pain by local application of campho-phenique, dry surface of slough and coat several times with the compound tincture of benzoin.

Should the patient complain of a smarting sensation, either while applying or after removal of the rubber-dam, try and locate the spot on the gum that has been injured by the formaldehyde. If fortunate enough to discover the spot apply a little weak water of ammonia and follow with an application of 10-per-cent. solution of trichloroacetic acid, which will inhibit the further entrance of the formaldehyde.—A. C. Hart, *Med.-Dental Gazette*.

Care in Trimming an Amalgam Filling.—With amalgam the greatest care should be exercised in shaping the proximal surface of the filling, and especially in trimming away all surplus amalgam from the interproximal space while the amalgam is plastic. If an excess of the material be allowed to extend over the cervical margin of the cavity till it becomes hard the operator will experience great difficulty in its removal, and the gum tissue will never remain healthy in a space partially filled with nodules of amalgam. All fillings at this point should be finished flush with the margin, and be made as smooth as the best skill will permit.—C. N. Johnson, *Dental Review*.

Soldering.—Soldering is an easy process provided the conditions are all right. First, the plate should be dropped into the acid (sulfuric) while hot, to clean the surface of oxid. Second, there should be plenty of borax and yet not an excess. Third, the solder should not be applied in large pieces, and never heat the case till the borax and solder have been applied. Fourth, heat the case hot as possible over a gas burner. In soldering the teeth in a partial case (the time has long since past when it was advisable to solder full cases), apply the heat first to the middle of the plate, for the backings are so exposed that if the heat is applied to them first, being hotter than the plate, the solder tends to flow from the plate on to them.—L. P. Haskell, in *Dental Brief*.

Alloys and Their Melting Points.—The following alloys will melt in boiling water or at a lower temperature:

	Tin.	Lead.	Bismuth.	Cadmium.	C.	F.
Newton's . . .	3	2	5	0	100°	212°
Rose's	3	8	8	0	95°	203°
Erman's	1	1	2	0	93°	199°
Wood's	2	4	7	1	70°	158°
Mellott's . . .	5	3	8	0	93°	200°
Harper's . . .	4	4	7	1	80°	180°

Erman's alloy can be made of equal parts of plumber's half and half solder (equal parts tin and lead) and bismuth. Harper's alloy can be made of 8 parts of plumber's half and half solder, 7 parts bismuth, and one of cadmium, and can be poured into a modelling composition impres-

sion. It is hard enough to withstand the hammering required, and makes a smooth, sharp die.

A Useful Suggestion.—Dr. J. G. W. Werner, Boston, said that some time ago he had a case to fill, a right lower third molar; was filling it with gold. When two-thirds of the cavity was filled he found that the gold would not stick. He thought his assistant had gotten mercury or iodine perhaps on the foil carrier, but found that it was not so. He removed the filling and filled again, with the same result. Upon making careful examination he found a portion of an old copper amalgam filling remaining in the tooth, and the mercury from this had destroyed the quality of his gold. This shows that it is a mistake to suppose that no mercury can come from an amalgam filling after it is hard. Those who make such statements should be more careful.—*Cosmos*.

To Prevent Evaporation of Ether from Bottles.—Fill the bottle nearly full with ether, pour in sufficient glycerin to bring the surface of the ether nearly to the bottom of the stopper; then insert the latter carefully, and with a piece of twine of sufficient length suspend the bottle neck downward from a nail or other support, letting the cord pass over the stopper and take a turn around the body of the bottle from each side, so that it will hang perpendicularly and safely. The glycerin descends and fills the neck of the bottle, sealing the latter hermetically, and when any of the contents are required for use it is only necessary to re-invert the bottle, remove the stopper, and carefully wipe the neck before pouring. The glycerin, of course, drops to the bottom, and allows the ether to be poured out almost to the last drop if care be taken. A similar plan is useful for bottles containing benzol.—*National Druggist*.

Use of Creosote and Iodin for Alveolar Abscess.—Dissolve crystals of iodine in creosote until you have a saturated solution. Protect the adjacent tissues well with absorbent cotton or napkins. After an opening through the apical foramen and through the sinus has been effected, wash out with H_2O_2 or three per cent. solution of pyrozone. Wipe out canals and with a few shreds of cotton wound loosely on a broach, carry the remedy as far up into the canal as possible. Place unvulcanized rubber in the canal, and with a wooden piston force the remedy out through the sinus, placing napkin over the opening. If preferred, a hypodermic syringe may be used, being careful to have such a packing about the needle as to prevent regurgitation of the medicament into the mouth. As soon as the remedy appears at the opening, fill the roots, for the chloro percha through sinus and out at opening, which will insure perfect root filling. The rest of the operation can then be completed in the usual manner.—*P. H. Jones, in Items of Interest*.

New Publications.

A TEXT-BOOK OF DENTAL PATHOLOGY, THERAPEUTICS, INCLUDING PHARMACOLOGY, being a Treatise on the Principles and Practice of Dental Medicine. For Students and Practitioners. By Henry H. Burchard, M.D., D.D.S., Special Lecturer on Dental Pathology and Therapeutics in the Philadelphia Dental College. In one very handsome octavo volume of 575 pages. Cloth, \$5.00; Leather, \$6.00. *Net.* Lea Brothers & Co., Publishers, Philadelphia and New York.

This is the third volume of the series of American Text-Books of Dentistry of which *Essig's Prosthetic Dentistry*, and *Kirk's Operative Dentistry* are the first and second. These have been favorably received and won much praise for their excellence, and it is safe to predict that this third volume will meet the same success.

Dr. Burchard is well and favorably known as a dental writer of merit and this book throughout displays his good judgment in the selection and arrangement of material pertaining to the subjects treated.

Regarding the work the author in his preface says: "This volume is designed as a text-book of the principles and practice of dental medicine for the use of students, and as a reference work on applied special pathology and therapeutics for the use of dentists. Accepting the dictum of the advanced teachers of the day, the writer believes that an entirely rational system of dental medicine can have but one basis—namely, the same principles which underlie general medical and surgical practice. The book represents, therefore, an attempt at formulating, from data obtained from every available source, a system of dental pathology and therapeutics, of which the several parts shall be in harmony with one another and also with the several collateral sciences involved. The impulse promoting the work was no desire to multiply books, but arose from a conviction expressed by many teachers that such a volume is needed by students, practitioners, and teachers."

To give the reader some idea of the matter contained in the work, we will note the principal subjects treated:

Sec. 1. General Pathology. Chap. I. General Principles; Chap. II. Cause of Disease, General and Local; Chap. III. Bacteriology, with Special Reference to Dental Pathology and Therapeutics; Chap. IV. Disturbances of Nutrition: Atrophy, Degeneration, Necrosis, Hypertrophy, Tumors; Chap. V. Disturbances

of the Vascular System; Chap. VI. Infective Inflammations: Suppuration, Abscess, Fevers, Septicemia, and Pyemia.

Sec. 2. Anatomy and Development. Chap. VII. The Development and Structure of the Jaws and Teeth; Chap. VIII. The Surgical Anatomy of the Teeth; Chap. IX. Dentition: Its Progress, Variations, and Attendant Disorders; Chap. X. Malformations and Malpositions of the Teeth.

Sec. 3. Affections of Enamel and Dentine; Chap. XI. Affections of Enamel; Chap. XII. Diseases of the Dentine, Dental Caries; Chap. XIII. Dental Caries: Its Causes and Clinical History; Chap. XIV. Dental Caries: Pathology and Morbid Anatomy; Chap. XV. Dental Caries: Diagnosis, Symptoms, and Prognosis; Chap. XVI. Dental Caries: Therapeutics and Prophylaxis.

Sec. 4. Diseases of the Dental Pulp. Chap. XVII. Constructive Diseases; Chap. XVIII. Destructive Diseases of the Dental Pulp; Chap. XIX. Chronic Degenerations and Devitalization of the Pulp; Chap. XX. Gangrene of the Pulp.

Sec. 5. Diseases of the Pericementum. Chap. XXI. Septic Apical Pericementitis (acute); Chap. XXII. Septic Apical Pericementitis (chronic); Chap. XXIII. Non-Septic General and Apical Pericementitis; Chap. XXIV. Pericemental Diseases Beginning at the Gum-Margin; Chap. XXV. Pyorrhea Alveolaris; Chap. XXVI. Diseases of the Pericementum Beginning upon a Lateral Aspect of the Teeth.

Sec. 6. Chap. XXVII. Diseases of the Deciduous Teeth and their Treatment; Chap. XXVIII. Reflex Disorders of Dental Origin; Chap. XXIX. Infections of and from the Mouth, and Sterilization.

Sec. 7. Dental Pharmacology and Dental Materia Medica, Dental Pharmacology, Dental Pharmacopeia.

The book contains 575 pages, 388 engravings and 2 colored plates.

In carefully looking over the work we have noticed but few errors and these are of minor importance. The arrangement of Fig. 306, on page 301, is misleading. The cut is wrong side up and should be reversed in order to have the figures correspond with the descriptions. As it is, description 1 describes No. 9 instead of No. 1; description 2, describes No. 8, instead of No. 2, etc.

The book is well written, and arranged, and is a valuable addition to dental literature and we heartily recommend it to our readers.

The printing and binding are fully up to the standard of the excellent work of these well-known publishers.

A COMPEND OF DENTAL PATHOLOGY AND DENTAL MEDICINE. By George W. Warren, A.M., D.D.S. Third edition. Philadelphia: P. Blackiston Son & Co., publishers, 1898. Price, 80 cents.

This little book contains the most noteworthy points upon the subjects of interest to the dental student, and a section on emergencies. It is a valuable work for one of its kind and will be found useful, especially to students.

TRANSACTIONS OF THE AMERICAN DENTAL ASSOCIATION, 1897.

This number of the transactions is of more than ordinary interest. The contributions of W. A. Price, on "The Phenomena of Cataphoresis;" J. S. Cassidy, on the "Relations of Chemistry to Dentistry;" C. S. Case, on "Force and Anchorage in Movement of Teeth;" I. N. Bromell, on "Macroscopic Tooth-Development;" C. H. Ward, "Human Teeth from a Comparative Standpoint," and reports of W. C. Barrett, J. D. Patterson, C. N. Peirce, are well worthy a careful study. This is one of the best numbers yet issued and is gotten up in the usual excellent style characteristic of the *Cosmos* publishers.

THE DENTAL CENTURY. A Monthly Dental Journal, edited and published by Dr. W. G. Beecroft, Madison, Wis. Vol. I, No. 1, has been received.

This new journal is designed for the dentists throughout the northwest. The first issue is well gotten up and we hope it will meet the success anticipated.

A LIST OF REGISTERED DENTISTS OF OHIO. Published by F. H. Lyder, D.D.S., Akron, Ohio, former Secretary of the Board of Dental Examiners. Price, 10 cents.

This list contains the names of all dentists in Ohio, licensed

up to April 28th, 1898. It is arranged alphabetically and is a valuable reference book. 1,895 certificates have been issued in the State.

SOCIETIES.

Wisconsin State Dental Society.

THE twenty-eighth annual meeting of the Wisconsin State Dental Society, will be held at Madison, July 19-21, 1898. An interesting programme will be provided. Dentists in the State of Wisconsin, who are not members of the society, and also dentists from other states, are cordially invited to meet with us.

Hotels and railroads will make the usual reductions.

R. G. RICHTER, President.

W. H. MUELLER, Secretary, 21 W. Main St., Madison, Wis.

The Missouri State Dental Association

SPECIAL NOTICE.

THE place of meeting of this association has been changed from Meramec Highlands to the city of St. Louis, July 5th to 8th, inclusive.

The Planter's Hotel will be the association headquarters, where ample accommodations will be provided for the holding of the most successful meeting ever held in the State.

ESSAYS.

Dr. Frank Slater, Rich Hill—President's Address. Dr. J. C. Goodrich, Wentzville—Farewell Address. Dr. Edward H. Angle, St. Louis—Orthodontia. Dr. J. D. Patterson, Kansas City—The Ideal Lower Denture in Difficult Cases. Dr. O. L. Kerr, Independence—Preparation of Cavities. Dr. J. R. Megraw, Fayette—The Individual and the Society. Dr. R. L. Ready, Liberty—Treatment of Pyorrhea Alveolaris. Dr. F. F. Fletcher, St. Louis, The Practical Bridge of Today. (Second paper). Dr. B. J. Cigrand—The Full Porcelain Crown without a Peer. Dr. O. W.

Bedell, St. Louis—The Young Man in Dentistry. Dr. E. S. Chisholm, St. Louis—Philosophical Laws as Applied to Dentistry, with Illustrations. Dr. H. Prinz, St. Louis—Hemorrhage following Extraction of Teeth: Its Etiology and Treatment. Dr. DeCourcy Lindsley, St. Louis—Antidotes. A. H. Thompson, Topeka, Kans.—(Subject to be announced.)

CLINICS.

FIRST DAY.

Dr. B. Q. Stevens, Hannibal—Root filling with gutta-percha and wood points; Taking impressions of undeveloped root canals. Dr. J. D. Patterson, Kansas City—The ideal lower denture in difficult cases. Dr. H. J. Goslee, Chicago—An exhibit of the carved cusp system in crown- and bridge-work. Dr. H. S. Lowry, Kansas City, will demonstrate the Lowry system of crown- and bridge-work. Dr. F. H. Achelphol, St. Charles—Exhibit cranium with two impacted teeth; also models. Dr. W. E. Griswold, Denver—Removable bridge. Dr. M. R. Windhorst, St. Louis—Gold filling, using Solila Gold. Dr. C. D. Lukens, St. Louis—Taking impressions and making models for the correction of irregularities. Dr. J. R. Megraw, Fayette—A practical demonstration of hypnotism. Dr. J. H. Kennerly, St. Louis, will demonstrate Dr. B. J. Cigrand's intra-dental band. Dr. John G. Harper, St. Louis—Modelling compound as a counter die. Dr. Harry M. Hill, St. Louis—Refining gold. Dr. J. C. Chisholm, St. Louis—Combination filling, non-cohesive and cohesive gold. Dr. P. H. Eisloeffel, St. Louis—Immediate extirpation of pulp. Dr. A. J. Prosser, St. Louis, will demonstrate his method of using soft and cohesive gold in approximate fillings. Dr. F. F. Fletcher, St. Louis—Bleaching badly discolored teeth. Dr. D. J. McMillen, Kansas City—Non-cohesive gold filling. Dr. P. H. Morrison, St. Louis—Cleansing a set of teeth. Dr. A. D. Fuller, St. Louis—Soldering a Richmond crown.

SECOND DAY.

Dr. W. L. Reed, Mexico—Contour gold filling. Dr. M. C. Marshall, St. Louis—Approximate filling tin and gold. Dr. H. J. Goslee, Chicago—An exhibit of the carved cusp system in crown- and bridge-work. Dr. H. S. Lowry, Kansas City, will demonstrate the Lowry system. Dr. Burton L. Thorpe, Billings—Treatment.

of root canals with Kalium et Natrium. Dr. W. E. Griswold, Denver, Colo.—Removable bridge. Dr. C. D. Lukens, St. Louis—Taking impressions and making models for the correction of irregularities. Dr. J. R. Megraw, Fayette—A practical demonstration of hypnotism. Dr. Harry M. Hill, St. Louis—Refining gold. Dr. J. G. Pfoff, St. Louis—Compound contour gold filling. Dr. J. H. Kennerly, St. Louis—Table clinic. Dr. P. H. Eisloeffel, St. Louis—Immediate extirpation of pulp. Dr. A. J. Prosser, St. Louis—Preparation of broken down roots for crown and bridge-work. Dr. F. F. Fletcher, St. Louis—Bleaching badly discolored teeth. Dr. D. J. McMillen, Kansas City—Non-cohesive gold filling. Dr. P. H. Morrison, St. Louis—Cleansing a set of teeth.

J. H. KENNERLY,	}	Executive Committee.
DE COURCY LINDSLEY,		
F. F. FLETCHER,		

National Dental Association—Southern Branch.

To the Editor of Ohio Dental Journal:

DEAR SIR:—Kindly insert the following in your journal, for judging from the letters received, it is evident that there should be a wider diffusion of information in the south regarding the National Dental Association and its branches. In many of the States the law does not require a diploma as a pre requisite for license; these State societies which admit to membership all licensed practitioners, *regardless of diploma*, should therefore bear in mind that only their graduate members are entitled to election as delegates to the National Association and its branches. It should be made very clear that according to the constitution these bodies accept as *new* members only *delegates* elected by ballot at a regular meeting of the *State societies*, and also that delegates must be *graduates* in dentistry or have acquired the degree of M.D., or have entered the profession prior to Sept., 1875. The American and the Southern Dental Associations, did also, it is true, require graduation as a pre-requisite for membership, but as they did not restrict their eligible applicants for membership to *elected delegates* from *State societies*, this feature should there-

fore be emphasized. The requirements for membership in a branch of the National must necessarily be the same as in the National itself, as membership in the former confers membership in the latter. The above applies both to qualifications and to dues, which are \$5 in either case, but it should be borne in mind that if the dues are paid directly to the National Treasurer this does not pay dues in the branch, but the payment of \$5 to the Treasurer of the branch cancels all financial obligations to the National Treasury for the ensuing meeting, because the branch forwards to the National Treasurer three-fifths of the dues received. Payment of dues to the branch therefore insures for *a single fee double membership*, with all the rights, privileges and benefits of *both* bodies, including the joint volume of Transactions.

By request of the President of the Southern Branch.

C. L. ALEXANDER, Cor. Sec'y
Southern Branch National Dental Association.

Commencement.

WESTERN RESERVE UNIVERSITY, DENTAL COLLEGE.

THE annual commencement of the dental department of Western Reserve University, was held Tuesday, May 17, 1898, in Association Hall.

Rev. Dr. Louis Albert Banks, delivered the graduating address, entitled, "The Romance of Labor." President Chas. F. Thwing, D.D., of the University, conferred degrees upon the following candidates :

Herman Clifford Kenyon, Percy Ellis Maddock, Frank R. Mathews, Joseph Worrell McDill, John Allen McGannon, Francis Joseph McGannon, Frank Edgar Noland, Everett Eugene Quirk, John Babcock Reeves, Oliver William Renkert, Edward Burton Rogers, James Frank Rybak, Park Eugene Sprague, Robert Harrison Wallace, Leon Clark Vincent, Ph. B., Fred Fayette Chapman, Foster Oran Dudgeon, Charles Surfestus Draime, Calvin Riley Edson, Charles Drawn Elder, Isidor Englander, Albert Carl Fisher, William Woods Gillen, Penrose Thomas Haight, George Eels Hervey, Thomas Bertell Johnson, Edward Raymond Kelley.

OUR AFTERMATH.

MARRIED.—H. Q. Altenberg, of the Ransom and Randolph Co., Toledo, was united in marriage, Wednesday, June 8th, 1898, to Miss Mary E. Montgomery, of Bluffton, Ind. Harry has many friends throughout this section and we feel sure all will unite with us in extending hearty congratulations and best wishes.

GONE TO CALIFORNIA.—Dr. G. H. Cushing, of Chicago, one of the most honored men in the dental profession, has retired from actual practice and taken up his residence at Fairmont, California. His familiar face will now be missed at our society gatherings and his absence felt.

THE GERM THEORY BEFORE THE CHRISTIAN ERA.—Dr. Chas. W. Dulles (*University Medical Magazine*, May,) quotes, at the instigation of Prof. Alfred Gudeman, the following passage from Varro, *De Re Rustica*, book i, chapter xii, as a pre-Christian conception of the germ theory: *Advertendum etiam, si qua erunt loca palustria et propter easdem causas et quod arescunt et quod in iis crescunt animalia quedam minuta quae non possunt oculi consequi et per aera intus in corpus, per os ac nares, perveniunt atque efficiunt difficiles morbos.* (It must also be borne in mind if any places are marshy, not only for the same reasons, and because they become dry, but because also in them certain minute animals not traceable by sight grow in them, and, finding their way through the air into the body by way of the mouth and nose, bring about grave diseases.)

HOW GUTTA PERCHA IS MADE—The Director of Gardens, Straits, Settlements, gives the following in the *Kew Bulletin*: "I have just been down to inspect the little factory where Mr. Arnaud makes his gutta percha. . . . The leaves are imported in sacks dry from Borneo and Johore. Most of the trees are overcut in Singapore, and there are no more leaves left, I hear. The leaves and twigs cost four dollars and a half a picul (133 lbs.) They are then put damped with hot water into a rolling machine, two rollers worked against each other, which grind them to powder. The powder is thrown into tanks of water and shaken about. The gutta floats in the form of a green mealy-looking stuff, is lifted out by fine copper gauze nets, put in warm water and pressed into moulds. I have samples of the gutta as it comes from the leaves and the pressed out finished article. It is really a very curious little manufactory; I do not know how long it will last, on account of the difficulty of procuring leaves, which must, I think, sooner or later stop the trade." From Mr. Ridley's opinion, the prospect of this article as a trade product does not seem encouraging, but it opens a field for research in many directions that might become profitable. It is interesting and satisfactory to know, on the authority of Mr. Ridley, as recorded in the *Kew Bulletin*, that in connection with the destruction of gutta trees that at one time prevailed "the tree always comes up again when cut down. It can be cut to within six inches of the ground, and will then throw up shoots. Were it not for this, there would hardly be a single specimen in the country. It grows slowly in this manner, but never fails to come up again."

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CONTRIBUTIONS.

Some Fallacies Corrected.

BY L. P. HASKELL.

SOME recent articles on "Dies and Swaging" lead me to ask if there is a simple method of accomplishing certain ends, why resort to complicated methods? And yet this is just what is being done in much of the instruction in prosthetic dentistry given to the dental practitioner as well as to the dental student.

As for instance in the matter of moulding sand, years of experience have demonstrated beyond all question that oiled-sand, as a matter of convenience and time saving, is preferable to moistening with water, as it can be used many times without re-oiling, provided zinc is not used for dies, as that is poured so hot it burns the oil. Then if the dentist is in haste and moistens too much with water, or packs so hard the steam cannot escape, blow-holes are liable to occur in the die. The silly objection made that it soils the hands and creates an odor is hardly worth considering; but the fact is it does not soil the hands more than wet sand and the odor we fail to notice, and if we did it does not compare with the opening of a vulcanite flask. We have found of late that lard oil is preferable to olive or cotton-seed, as it

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does not burn and lump as the vegetable oils. The Chase Dental Co's oiled sand is a great convenience to the busy dentist.

Then as to the process of moulding. If the model is made *flaring* all around, it will find its way out of the mould readily and so mar the mould far less than if it is lifted out. If it does not drop readily do not turn the mould over and tap the model, but simply jar the edge of the flask on the edge of the moulding box. If it drops readily so much the better. The Bailey flasks are totally unfit for the purpose; too small and too flaring. Have a ring made of sheet iron 3 inches deep, 5 inches in diameter, the edges wired. With this there is plenty of room for packing the largest cases. Use the Bailey flask for casting the counter die.

As to the material for dies, one would suppose that 48 years' successful use of Babbitt metal, after having used for five years zinc, type-metal, etc., would demonstrate its superiority, for it is the only alloy which has all of the necessary qualities for a dental die. I know and so do the multitude of dentists who use it, that it has greatly simplified the fitting of metal plates to the jaw. If it successfully fits plates for the heavy Continuous-gum denture, and needing no vacuum cavities, it would seem as though nothing farther need be said.

Aluminum does not need annealing; it is better not to. Instead of using the mallet on the palatal surface roll a wad of wet paper and use as a half counter, and so the surface is not marred. It is so soft it does not crack, but is apt to tear over the edge of an undercut; to prevent this pare off the portion of the counter die which projects into the undercut, then after swaging drive into the undercut with round-faced hammer. After using the paper wad lay a piece of rubber dam over the palatal surface in finishing the swaging. I use the shot apparatus occasionally, but deem it unnecessary in most cases, having successfully *fitted* plates without it for 53 years.

The new platinoid I have used in two cases to my sorrow. It discolours badly and the patients complain of a bad taste. Both cases had to be made over on aluminum.

Concerning the Possibilities in the Art of Filling Teeth.*

BY H. A. SMITH, D.D.S., CINCINNATI, OHIO.

I HAVE been lead to this subject—Possibilities in the Art of Filling Teeth—by observing from time to time, on the part of not a few of our more thoughtful and experienced practitioners, a feeling of distrust or disappointment in their ability to save teeth by the operation of filling.

This feeling of distrust was given expression by one of our most skillful practitioners at the last meeting of the Ohio State Dental Society, when he said, "I think filling teeth is a failure." Another practitioner of experience and reputation, in Chicago, recently stated publicly, "that quite one-third of his time was occupied in refilling teeth, mostly approximal surfaces of bicuspid and molars, that had not been filled for more than two years." These and like expressions which we often hear, coupled perhaps, with feelings of chagrin at our own frequent failure to permanently benefit our patients, may well cause us to pause and inquire concerning the possibilities in this department of our practice.

The art of filling teeth has been followed for more than 150 years. Although filling is the true therapeutical treatment for dental caries, during most of this long period, the practice was somewhat empirical. With the erroneous views held as to the active causes of caries, the operation of filling teeth was based upon observation and experience alone. As practiced now, filling has a true scientific basis.

It must not be forgotten that there are two objects in filling teeth; the arrest of caries and the prevention of its recurrence. Both of these objects must be kept clearly in mind when we consider the possibilities in filling teeth.

The arrest of caries is as a rule not difficult. We can accomplish this by removing the active causes of caries, surgically and chemically. But since caries would not long remain inactive following excavation and sterilization, we are compelled to resort to filling. With the cavity prepared according to approved rules, and with the use of gold skillfully manipulated we may, (in favora-

*Abstract of Paper read at the Tri-State Dental meeting, Put-in-Bay, June, 1898.

ble cases,) hermetically seal the cavity. And again we say, caries is arrested.

If the cavity is upon the occlusal surface and we have sealed it so that water, fermentable food debris and micro organisms cannot enter, we need not concern ourselves about the recurrence of caries. If, however, the cavity is upon the approximal surface,—where the teeth are most given to caries—and the operator has only in mind the arrest of caries, the life of his filling, no matter how skillfully made, will not, as a rule, exceed the two year's limit mentioned by our Chicago friend. In cases where predisposition to caries is strong, a close study and judicious application of the *gospel of extention for prevention* is essential for the preservation of the tooth. Prof. Black has written ably upon the whole subject, both scientifically and practically. Upon this point he says, "Whenever the predisposition to caries is found to be strong, this fact calls for the utmost diligence in planning the defence of the teeth; and especially in laying out the lines of the enamel margins of cavities in such positions that they will be well cleansed by the excursions of food over them in mastication. For this purpose the buccal and lingual enamel margins of approximate surfaces should be carried well out from the contact point, and the form of the occlusal surfaces so shaped as to direct the excursions of food well into the buccal embrasures of the interproximate space to facilitate the continuous cleansing of these margins." . . "With the best technique of our time, the margins of fillings must still be regarded as danger lines."

In describing the so-called ideal filling, I have not described an impossible operation. Such fillings are being made by hundreds of dentists to-day. These operations are only possible however, to the skillful, painstaking, conscientious and heroic dentist. Such men are scientific as well as eminently practical. They are naturally, and by right ought to be, representative of their profession; and that which they accomplish in filling, should be regarded as the best expression of the art. Yet operations from the hands of our best men fail over and over. But since the best resources of the art have been exhausted in making these so called failures, they represent in a negative way, the possibilities in filling teeth. As a rule our failures attract more attention than our successes in filling. This is unjust. We should be judged by our successes. Likewise our art should be judged by

its best productions. It also has its limitations, hence its failures.

I do not wish to be understood as taking a pessimistic view of the operation under consideration. Filling teeth has been of vast benefit to our race, and will continue to be. Always, when teeth are filled by a skillful and trained operator who exercises his best judgment in the case, the patient receives benefits worth all the services cost. Unfortunately the people have been led all along to believe that filling was an infallible remedy for carious teeth. This is no fault of the people, but is due to the ignorance and cupidity of a certain class of practitioners.

Mr. Chas. Tomes says: "There is, perhaps, no other operation performed upon the human body which is attended with the same unqualified success as that of filling teeth, for we not only succeed in the majority of cases in arresting the further progress of disease, but we also replace the part which has been lost by an imperishable material, and render the organ as useful as it was prior to becoming the subject of caries. It is, however, a great error to suppose that filling will, under all circumstances, permanently save the tooth, even in cases which at the time the operation promised favorably." . . . "There are those who are disposed to regard the decay of a tooth which has been filled, as the result of the want of skill or of care in the operator; such an opinion is perfectly untenable, when the character of the operation is considered in connection with the tissues which are involved, and the various conditions under which disorganization may be affected." . . . "There are other sources of failure than the assumed want of skill in operating, and such are not under the control of the dental surgeon or of the patient."

Notwithstanding the more recent investigations of Miller, Black, Williams, Andrews, and of Mr. Tomes himself,—all of which investigations have a practical bearing upon filling teeth,—the above quotation accurately describes the situation to day so far as the possibilities of the art are concerned.

Objection may also be made that I have only referred to one kind of filling material,—gold—when in a good number of cases the possibilities of filling are best accomplished with other materials. While this is true, it does not do away with the fact that, when its use is indicated, gold is the very best material known to us.

Of amalgams, I may say, in my practice, they have been

disappointing. The newer amalgams, formulated by Prof. Black, called "quick-setting" I have used to a limited extent, and in my opinion they promise to be an improvement over most of the amalgams now in use.

It may be interesting to enquire in this connection, what would be the effect upon the practice of filling teeth if the ideal filling material should be discovered? I venture the opinion that no more perfect fillings would be made then than now. Naturally, because of easier manipulation, the number, as well as the proportion of good saving fillings would greatly increase. Given the same unfavorable environment, the perfect filling made with the ideal material, would not last any longer or preserve the tooth any better than the perfect filling made to day of gold.

In future, if the operation of filling teeth shall meet the reasonable expectations of patients, more study and thought must be given by the dentist to the prevention of caries. Prophylaxis should at last receive attention equally with the mechanical technique of the art.

Degeneration and Decay of the Oral Tissues from Lack of Exercise.*

BY S. B. DEWEY, D.D.S., M.D., CLEVELAND, O.

THAT the oral tissues are degenerating must be apparent to the most casual observer. The lack of full development of the jaws and a symmetry in the arrangement of the teeth is due to degeneration or want of normal force to reproduce the kind to its full standard. The first stages of development may be retarded owing to the feeble state of the nervous system which controls assimilation and nutrition. The impress upon the embryo will be more or less apparent throughout the developmental period, but if such means as are at our command be used to overcome this condition, much improvement will be noted.

The jaw develops from before backwards, therefore jaws not exercised by mastication would be less in length than one which had been well exercised.

One of the chief factors in the arrest of development of the

*Abstract of Paper read at Tri-State Dental Meeting, Put-in-Bay, June, 1898.

jaws is the want of maxillary exercise. Blood is not carried to the parts to nourish the bones. The teeth suffer in a like manner. By the lack of lateral motion from little work given the teeth, the alveolar process will be insufficiently developed.

Jaws and teeth that are not used to grind the food will be imperfectly developed, weak processes, tooth socket poorly nourished, periodontal membrane and gums loose in structure, readily yielding to destructive influences, lack of development because we fail to use it for its normal function, therefore fails to develop for want of use or requirement.

If man's food habits are such that he requires but little of his dental organs they will develop accordingly.

As soon as the being passes from the stage of infancy into childhood, (infancy ends with completion of first dentition) the mouth is equipped with a mill that was designed to grind coarse food into a fine pasty mass that may be appropriated by the economy for the upbuilding and maintenance of the body, and if on entering childhood the child were taught that all food should be thoroughly masticated, and incorporated with saliva before passing into the stomach, the advantages gained would be three-fold; First, the chewing would give exercise to the jaws and teeth, promoting their growth and perfecting the type. Secondly, the perfect preparation of the food, for the future digestive process would be sure to insure its assimilation. Thirdly, under these conditions the nutritive changes would be in balance, and structures would be builded that would better withstand unfavorable environment.

The tendency of both man and child is to discard all foods that are hard and not ready to be hastily swallowed. The diet should consist of such food as requires chewing and will furnish the proper nourishment to the developing teeth and surroundings, and in later life must serve to clean them and keep the tooth socket supplied with new blood, that its repair may at least equal the waste. In the unused organs the waste is greater than the repair and as a result we have breaking down of the attachments, pus formations and their loss.

Nature designed that the teeth should be cleaned by chewing solid food, and Dr. Black says, "Keep the margins of the fillings in the interproximate space clean by frequent excursions of food over them." Pray tell us how we are going to do this unless our

diet is composed of food that requires chewing that these excursions may be made.

As dentists, we are appalled at the number of children of tender years who require a large number of fillings in their permanent teeth, who on examination present teeth and gum margins thickly coated with the soft remains of starchy food in an active state of fermentation. Would this be so if the child lived on food that required chewing?

The thorough mastication of the food means to the child clean teeth, free from decay, perfectly developed jaws with a minimum of irregularity, and the building up of a tooth-socket and gum-tissue of such quality that phagedenic pericementitis will be a thing unknown in middle and later life. Tough beef and the hard baked loaf would prove enemies of dyspepsia, malnutrition, dental decay, and irregularity and the friend of mankind and his progeny. How often are we disgusted with our older patients who have applied for relief from so-called pyorrhea alveolaris and after we have spent much time in scraping and cleaning to free the teeth and gums of the objectionable accumulations, to have them return after an interval of two or three days with the mouth again reeking with the debris of the past few meals?

Our patients rely too much on our skill and ability to relieve them of their difficulties, instead of by careful effort trying to avoid those irregularities they know lead to diseased conditions. Who ever knew of a real case of phagedenic pericementitis among those who use the masticatory organs fully? I have yet to see the first case, and my experience is not a little in this line. Did you ever see this disease in a tobacco chewer's mouth? You may find pockets with accumulations crowded therein but no pus, at least this is my experience.

Some writer on irregularities of the teeth, says that irregularity does not exist in the tobacco chewer's mouth. The habit corrects or prevents it. For some time past I have taken pains to enquire into the habits of those demanding treatment for so called pyorrhea and find it the rule with no exceptions that the victim bolts his food which consists largely of mush and sops. Just recently on asking a lady who is under treatment two or three times a year, as to her food habits, she replied, "My sister-in-law says she never saw a family so given to sopping food as

ours." The conditions present in her mouth verified the truth of her statement.

In the many recent discussions of this vexed topic, much has been said about the teeth being the farthest from the centers of nutrition and therefore suffer in consequence. This being so, the more the need of pressing the teeth into active service. Requiring a certain amount of work at each meal, that new blood may be brought to the parts, thus aiding in the supply of nutritive material. Much stress is also placed on the importance of perfect assimilation of the ingested food that we may have perfect nutrition.

Did I hear a voice advocating the more thorough masticating of the food that it may be easily digested and readily assimilated?

We should be teachers as well as healers, ever ready to detect abnormal conditions and vicious habits and offer the proper advice for their correction.

We will find it labor lost trying to reform adult man, but we can place those matters in such light that those having the care of children will feel their importance and enforce their application. Children in an eastern kindergarten are required to bring a luncheon of bread and butter and fruit which is eaten in the presence of the teachers and they are instructed to see that each child eats the crusts of bread. It would seem in this case at least, that the teachers instead of the dentist had taken the initiative in this important matter. The mouth of fever patients do not become free from its coatings until they begin to eat solid food.

The coatings on the tongue and mucous membrane contain bacteria which will excite fermentation in food particles lodging on the teeth. The chewing of coarse food will tear off this film of bacteria that may coat the teeth. Teeth used daily in mastication do not have the accumulation of calculus that are to be seen on the unused organs. Examples are found in mouths where one side is disabled. Dr. Talbot says, "If the mouth and teeth were kept absolutely clean so that chemical changes could not take place, the teeth would certainly never decay no matter how imperfectly the enamel might be developed. If the gums be stimulated in a proper manner and kept in a healthy condition, they are decidedly less liable to become infected with pyorrhœa." He did not suggest a means of obtaining this desired end. Let

me say that proper mastication will keep the mouth clean, nutrition of the teeth and gums more perfect and that the act will furnish the proper stimulus to keep the gums and tooth socket in a healthy condition. The beauty and health of the teeth depend on the perfect harmony of nutrition and absorption, waste and repair.

It is better to rely on the chewing to keep the teeth and mucous membrane clean, than upon the use of drugs. Nature never designed the mouth to be the testing ground for all the antiseptics that the chemist might produce. The constant use of antiseptics lowers the vitality of tissues and renders them readily assailable by destructive force.

Atrophy of the jaw from non-use or faulty nutrition is one of the neurotic manifestations. Over-development of the brain and nervous system a tendency in modern life. The most rapid growth of the brain occurs during the first seven years, and if we over-stimulate this growth it is at the expense of the osseous system. The most vascular parts are first served with nutritive elements, and if there is not enough to go around the parts farthest from the seats of nutrition, (the bones and teeth) the least vascular, must consequently suffer from this extra brain development. Well digested and assimilated food must produce a well nourished nervous system, a normal nervous system, a well developed body in all its parts.

The time that imperfect development of the maxillary bones begin to show and irregularity of the teeth is apparent, is between the ages of six and twelve years. At a time when our children are living on a diet consisting largely of cooked ground grains, or mush, which require little or no chewing, a habit of diet which robs the jaws and teeth of the exercise which the chewing of more solid food would give them. If habits of exercising the jaws and teeth were acquired at this period, better development would be obtained, and much irregularity would be averted.

"It is said the wholesale extraction of the first molar in the past has caused arrest of development of the alveolar process as well as of the maxillary bones, for the process and jaws depend for their development largely on the function of the teeth, their articulation and their motion stimulating nutrition and enlarging the arch. The horizontal portion of the lower jaw will be improp-

erly developed because function, one of the most important means of development is lost, and insufficient room is left for the second and third molars."

If we must needs keep this tooth for work, that the jaw may be properly developed, then let us give all the teeth all the exercise nature designed them to have, and surely we will have jaws and teeth in greater harmony.

As for food that is prepared at the factory and ready to be swallowed at once, why, we will bequeath that to the unfortunate who wear factory teeth that will not decay, and have not periodontal membranes to degenerate, therefore cannot suffer from lack of exercise. And as a last argument for the more thorough mastication of the food, let me remind you that it is now claimed that the human being can live without a stomach, and should man through misfortune or "degeneracy" be deprived of this supposed important organ, then surely "the mill must grind exceedingly fine" and the provender be well mixed with saliva before it starts on its shortened route.

The Effect of Heat on Dentine.*

BY G. W. COOK, D.D.S., CHICAGO.

IN investigating as to how much heat could be used in a tooth, I found three factors to be taken into consideration, viz: the effect of heat on bacteria, the amount of moisture extracted and the effect on dentine. The first of these is of the greatest importance, a temperature only 6° above the body temperature will render micro-organisms harmless. 90° C. in most all cases kill bacteria in pulp canals, by an application of ten minutes when a root canal drier is used. But after a number of experiments at various degrees of heat, I found it required about 130° C. of three applications of four and a half minutes each to thoroughly sterilize root canals. A course of treatment of this kind necessarily causes the loss of moisture, and what the effect of such a loss on tooth structure will be is a question.

Of course, all living tissues contain more or less water. But water as water does not enter into the chemical constitution of

* Abstract of Paper read before the Tri-State Dental meeting, Put-in-Bay, O., June, 1898.

the molecules, but is simply held by inhibition, *i. e.*, the power of all colloid substance to imbibe (take up) a certain amount of water, which causes them to swell up and keep their shape as well as their toughness and flexibility (not easily broken). It might truly be stated that the function of water in all bony tissue, in so far as its resistance is concerned, is to keep the colloid material in an elastic, tough condition as opposed to the brittle, non-elastic condition of dry fibrous tissue. So it is readily seen that while water is not an element in tooth structure at all, its presence is necessary for the normal elasticity and toughness of the tooth tissue.

On the other hand, if the water is driven off by heat or otherwise, a shrinking follows, and instead of being elastic and flexible, the teeth become brittle and inelastic. From these facts the brittleness of old dry teeth, or teeth which have been subjected to a degree of heat to drive off water, can be explained. Although it is hard to make out any contraction in the dentine or separation of it from the enamel, yet it is a well proven fact that after drying, the enamel is easily broken off from the dentine and the whole tooth structure rendered more brittle. This can only be explained by assuming that the water held mechanically by the colloid matrix of the tooth has been driven off, thus rendering the organic structure brittle and non-elastic.

From the above, the function of the water as regulating the integrity of the tooth is evident as well as the effect of drawing off the water upon the elasticity and flexibility of the tooth.

I found that the application of a temperature of 130° C. by means of the root drier was sufficient to destroy bacteria in pulp canals in three applications of 4½ minutes each. Such treatment generally reduced the weight of the tooth from 0.65 to 1 per cent., the loss being due to the driving off of water. While such an application of heat aids very materially in the destruction of bacteria, and in rendering the pulp canal aseptic, the question concerning its action on the resisting power of the tooth structure, must be taken into consideration. As already stated, such a degree of heat has no chemical effect whatever on the inorganic salts which enter into the earthy or hard structure of the tooth. Also it might be stated in experimenting on the resisting powers of teeth towards pressure, both before and after the use of heat in the manner already described, I should detect no difference in

resistance, and further I will say that the results of my experiments in this line correspond very closely with those of Black. These experiments indicate that the resistance of the tooth structure is unimpaired by the use of the root drier.

After one has removed by mechanical means, all the debris from the pulp canal, the application of the root drier at a temperature of about 90° to 150° C. for a very few minutes would not be out of place. But if you raise the temperature to where you get the hissing sound with root drier, which is 170° C., there will be a drying out of the organic substance, thus rendering the teeth more brittle.

Suggestion as a Factor in Controlling Patients During Dental Operations.*

BY DR. ALEXANDER JAMESON, INDIANAPOLIS.

A HISTORY of hypnotism, mesmerism, or animal magnetism, call it what you may, presents a series of theories and observations that are at wide variance, and are well calculated to fill the fair-minded man with distrust. But all through its history, though it may have been the instrument of charlatans and fakirs, there have been *results*, and these results were the cause of its investigation by scientific men, so that to day it is no longer shrouded in mystery and darkness, but stands out a definite and tangible science, if you please, ready for our use if we choose to use it.

Hypnosis is of two degrees, the formal and informal. In the formal the hypnotist assumes complete mental control of the subject. In the informal there is a changeable degree of mental domination or influence. This latter state prevails usually without the knowledge of the subject, it is generally called "suggestion," and is one of the most potent factors in the easy management of nervous and apprehensive patients.

We see cases often where the abuse of this power by the dentist is so plain and apparent that it fills us with righteous indignation. Proper and legitimate use of suggestion by the dentist is in the direction of his patients and controlling them so

* Abstract of a paper read before the Tri-State Dental Meeting, Put-in-Bay, Ohio, June 22, 1898.

that he can treat them, and not in its use as a powerful glass to magnify the eye. A brief discussion of the "neuron motility hypothesis" will pave the way for further speculation in this matter. The nerve cell and its attachments is the nerve unit and is called the *neuron*. This neuron is composed of three main parts, the cell or body, the axon and the tufted end of the axon. Also upon the cell body are to be found three processes or dendrons, also slight elevations called gemmules. Neurons are of two kinds, those that have long axons and those having axons that branch immediately on leaving the cell. Now an impression is carried to the brain by three neurons and the impulse from the brain to the muscle by two, so that there is a system of relays, the impression or motion is continuous. The point of contact between one neuron and the next bears a resemblance to the anostomosis of the veins and the arteries through the capillaries, only that one is a relation of contact and the other of continuity. It is generally explained that all impressions are carried by the wave-like or an undulatory force, and that this force causes an elongation of the terminal ends of the axon with consequent contact with the dendons of the next neuron. When we consider that there are 3,000,000 neurons in the body, nearly one-half of which are in the brain, and each one possessing this power in its terminal filaments, we begin to realize what a delicate mechanism this is and how susceptible it must be to any stimulus or any impression. The process of sleep is thus described by one authority: "A retraction of the processes in the areas of the brain controlling the senses and voluntary motion, whether arising from loss of cell contents or voluntary relaxation, they produce unconsciousness or sleep. The neurons have become so that mere impulses are not received or transmitted"; also, "By means of external stimulus and centripetal impulse, from suggestion or auto-suggestion or in consequence of the renewed supply of cell contents, processes are protracted, those of the auditory, usually going first, and the man awakens."

The close dividing line between hypnosis and sleep is probably better described by Meachem in his admirable work than elsewhere. He gives several examples of cases to sustain his position and make it more clear. He says: "I meet a patient, place him in a chair, talk soothingly but positively, using all possible suggestions or volition, as the mesmerists call it. I fix his

eyes while talking to him. He becomes absorbed in my words. His attention is given wholly to me. He gradually forgets the presence of others, recognizes no other sound than my voice. In the lessened consciousness the condition is related to sleep, but when my words have caused a placebo to act as a specific unit, a different element has entered, that of seemingly increased elasticity of the neurons, bodies and processes. Fewer neurons have been affected than in sleep, for the patient has been conscious of my personality, but unconscious of having experienced any abnormal conditions, though by manner, look and thought I have produced informal hypnosis."

The recognition of the class or kinds of people who are most susceptible to hypnotic influences would naturally suggest itself. The term "neurotic" is used to describe the disposition or temperament that is most easily effected. The short-eared, bullet-headed man is in no way fitted for the subject. On the contrary the neurotic is described as an individual who has a large well developed head, full forehead, large dreamy eyes far apart, with high arched brows, fine hair and soft skin, and with hands liable to perspire. In disposition he is imaginative, impulsive, easy to coax, but hard to drive, quick to perceive, but with an indifferent memory. It is to this class that the painters, poets and musicians belong. They are capable of enthusiasm, or depression, quick to be offended and quick to forget offense. They are not the plodders but the brilliant individuals. From this class also come the best hypnotists. It is generally conceded that thought waves are a means of transference of ideas to a greater or less extent. The more vigorous the thinker the stronger or more active the rhythms. The best hypnotist then is he who is capable of vigorous thought, and as a rule, he who is strong and healthy. But this does not mean, nor either is it conceded by the best authority, that the hypnotist is necessarily a mental superior in any way to the subject, he may be different mentally, but the difference is possibly in the matter of training in some one direction. Thus we see that the influence to be exerted in this way is not wholly the result of early suggestion, but of mental suggestion as well. We must not only tell our patients a certain fact, but we ourselves must be in an exalted, not a sluggish frame of mind.

Example of vigorous thinker, orator, who has fire and enthusiasm. If the audience is in touch with him, the thought waves

are intensified as they go from one to another. So that the intense or vigorous thought or action, with all things being equal, require a more profound result on the relaxed or sensitive neurons of our patient. As an example of this, if the dentist doubts his own ability, so will patient.

We all know that the great percentage of dental operations are painless, and we have patients who tell us that it is the dread of the thing more than the actual pain which makes them put off the necessary visits. Some will say they can stand all the pain we can inflict, if we will promise not to use the dental engine. With such patients, and there are many of them, I proceed as follows: After examining character of work to be done, I place patient comfortably in chair and seat myself deliberately before patient. I then impress them with the fact, I have all my life to do the work and give them a detailed description of the work necessary and of amount of pain. I impress them deeply that I am complete master of each instrument I use and that I understand anatomy of tooth to be worked upon. Do everything as carefully as if it were on my own tooth. I tell them also that I will warn them on the approach to a sensitive place in tooth and will stop on first sign from patient of pain. Always commence operation which is least painful to patient. The first operation should also be short so patient will not become exhausted, and as work progresses take more difficult operations. I give this procedure as a form of informal hypnosis. Each suggestion given if based upon the probabilities of the work will strengthen following suggestion and leave the patients to rely on your judgment, and will make what would ordinarily be termed a "nerve rack case" for both yourself and patient one that is easy of accomplishment. I will give to you a thought that was given to me by L. T. Meachem, to whom more than any one else I am indebted for the essential features of this paper. He says: "Suggest to the hyperesthetic patient that his condition is influenced by hyperæmia, that if he will relax himself and rotate his head that it will cause blood to flow back into the body and relieve his condition.

My idea of presenting this subject to a scientific body is that all things which are scientific are of especial interest to us when they may play an important part in our life work. We are at all times searching for ideas and appliances that make our work

easier and better. This is characteristic of the dentist, but we are not taking up ideas that are recommended to us without reason. Hence I have dwelt especially on the scientific side of this subject, and relegated the personal part to the background.

**Proceedings of Tri-State Dental Meeting, Held at Put-in-Bay,
June 21, 22 and 23, 1898.**

THE meeting was called to order at 2:10, by Dr. Loeffler, of Michigan. It was opened with prayer by Dr. J. Taft.

The welcome address was delivered by Dr. Molyneaux, of Cincinnati, Ohio, President of the Ohio State Dental Society.

This was responded to, first by Dr. Loeffler, President of the Michigan Dental Association. Also by Dr. Hartman, President of the Indiana State Dental Association.

The first paper for the day was "Suggestion as a Factor in Controlling Patients During Dental Operations," by Dr. A. Jameson, Indianapolis. (See page 373). The discussion was opened by Dr. C. B. BLACKMARR, Jackson, Mich.: When your committee asked me to open this discussion, I was told the subject was to be, "The Personal Element in Practice." When I received printed program I was still sure of the subject and felt as if I was ready for the same. Imagine my surprise when I heard the paper was on Hypnotism. Dr. Jameson thought it would give you all a better chance to talk on this subject and down me. I have concluded not to be downed that way. Sidney Flowers, of Chicago, is an editor of a journal entitled, "Medical Hypnosis." I will read you a few of the articles as practiced by Dr. Flowers. This is in the form of reports from different sources. First report: Is from Dr. Kingston, in the Kingston School of Therapeutics, in New York. He says: Most people think hypnotism is a mysterious thing. People think we possess wonderful powers to bring about cures very quickly. It depends upon the subject how long it will take to cure a disease. It is a subject of how soon the patient will lay aside all personal feelings and relieve himself to operators. The operator you will readily see must have patience and perseverance.

I had a patient who was very excitable, on entering my

office. I asked her to be seated in the chair; on seating in same, she was very much excited, her teeth were badly decayed at that portion overlapped by the gum. My dental friend who had sent her to me had led her to believe that all she had to do was to visit me at once and she would have no pain. My treatment of this case was as follows: I impressed her of the fact that she must relieve herself to me entirely. I placed her in the operating chair and told her to become perfectly relaxed and think of nothing but sleep, and close her eyes. (She would take these suggestions as I gave them.) After a short while she said she was perfectly ready to believe and do what I said.

I first impressed her of the fact that her teeth were as pieces of wood and she would feel no pain. After four or five of such treatments I could operate on teeth and she would have no pain. The next day she came. I tried to impress her of the fact that she was seated in a dentist's chair and that the dentist was going to work on her teeth, but that she would have no pain during the operation. I took her to the dentist's chair for the operation but as soon as the dentist commenced the work she had pain and would come out of her sleep. After this she related to me the great fear of her entire family of the dentist. I put her to sleep every day for more than a week, by the treatment as above given. Following this I gave her different treatment. I impressed her of the fact that her nerves were growing stronger, and gums were becoming more healthy and when they were operated on they were not painful; and the gums did not feel like gums but were free from sensibility. I ended by the suggestion that when she entered my office next time all sensibility of pain would leave her. I also gave her one suggestion—that she would have no pain when ever I touched her teeth, but on touching the dentine she had extreme pain. Further treatment consisted in impressing her of the fact that the operator on working on her teeth would not affect same. I impressed her of the fact that she would enjoy the whole operation and when she awakened she would have no pain. She then went from my place to the office of the dentist and he worked on the teeth without any pain whatever to her, and she chatted with the doctor. She called on me the next morning and said she had no pain and never felt better in her life than now."

I will now give you my own method of treatment. It fol-

flows above quite closely : "Every time I try to influence patients I begin by a suggestion in reference to lessening pain and follow it by suggestions already mentioned."

In general I think this or an anesthetic should be given in the office of a physician rather than the dentist, because if anything goes wrong the blame will be on the doctor. Some patients will not admit that the practitioner has better control than himself.

Every good orator in a sense hypnotizes his audience. Every dentist can also at the least do it to the same extent. But the patient must be willing to be controlled by the dentist, because the dentist *must* control the patient. I would say to the therapeutic man, "The paths of pain are thine, go forth and relieve the suffering of this wrong."

The question was then made open for general discussion.

DR. PARKER, of Grand Rapids: I think we have never had a better illustration of the power of suggestion than by these two speakers. When Dr. Jameson sat down you were having a sense of the philosophic feeling about you. But when Dr. Blackmarr sat down you had the funny side of the question, he suggested it to you and you saw it in that way.

It has been a study of mine for a long time. My thought upon the matter is, if I were called upon to give a new definition of the "genius homo," it is that, "man is he who suggests." Every singer and every artist suggests and the whole of life is suggestion. That it could be made to control pain it seems to me goes without saying. It certainly does to dentists who have thought of it along this line. Dr. Meachem said: "If you suggest to patient it is going to hurt, it will hurt. Take for instance the dental engine which is a terror to most all, I simply say to patient it is tool in my hands, if it hurts it is I doing it and not the engine. It is just as harmless as the excavator. Of course if you would get caught in a piece of machinery it would tear you to pieces, but this is not a machine but is an instrument in my hands. It will not hurt you any more than the excavator. I will give an illustration of what shall be done to bring the patient to understand, along the line of suggestion: Some ten years ago I had for a patient a very bright lady, teacher of drawing in our public schools. She had been practicing for quite a while what was then the fad and known as mind reading. She would do extraordinary things in this line; she came to me for a dental

operation, she had an exceedingly sensitive tooth, it was a lower molar, she said, don't you think you can hypnotize me? I said, I think I can if you will place yourself in such a position as I have seen in your seances; she said she could do it. I said you go to sleep, I also said, you are down to a certain park in our town and you are in a hammock and here is a book and it is an elegant story. I excavated the tooth and made the filling without any symptom of pain whatever, I said "all right," she awoke up and said she had been having a nice time, thought she was in the park in a hammock reading a delightful story. She said what have you been doing all this time [much laughter.] I never had another patient whom I thought I could control in that way.

DR. W. C. BARRETT, of Buffalo, N. Y.: Ever since the earliest times that hypnotism in some form has been prevalent, there have been many wonderful things attributed to its use. That these have all been reduced to a law I am not ready to accept. I do not believe in any of the stories that have been told by the advertising quacks, whether medical or dental, who have published articles and sent them out for advertising for patients. I am not one of the imaginative kind, it must take more than fictitious matter to impress my mind. It may be I have a peculiarly constructed mind, incapable of thinking of such things. A man in Chicago made prophecy: "That in five years every dentist who is worthy of practicing dentistry would be using hypnotism." I must be one of the unworthy. Down to the present time all the names by which it has been called, have the same generic order, animal magnetism, second sight, spiritualism in many of its manifestations, clairvoyancy, mental telegraphy, etc., all belong to the same generic class. I know of many cases in which the practice of hypnotism has brought the most serious injuries to patients. I believe, and long for the time to come, when this will be prohibited by law, except in persons peculiarly qualified for it, and I think that if it should come to-morrow the world would be a better one and dentistry would stand on a higher plane, and it would teach each one of us the use of the hypnotic power of kindness and delicacy of touch. We should not attempt by some kind of hypnotic power of any kind, by any kind of circus business whatever, to control patients instead of by means which are natural and which every dentist should certainly acquire.

When dentists get so that they will be exercising the power

of kindness, etc., they will have no need for any of this outside business whatever.

DR. G. E. HUNT of Indianapolis: I think it is perhaps a little unfortunate that the word hypnotism was uttered here this afternoon at all. The word is so connected in our minds, with charlatans and quacks and men who have some one to perform the antics for them, that it is a little difficult to disassociate our minds from that class of people. I do not know anything of hypnotism, I have seen people put to sleep, but whether a genuine case or not I do not know. Dr. Barrett says he does not use hypnotism, but I believe he uses suggestion and that is the first step toward the hypnotic state. Dr. Barrett calls it kindness and that is a good name for it, but it is the same. If he impresses the idea of his not going to hurt them he is using the first step of hypnotism. The hypnotists of to-day do not claim they have any supernatural power, or that they have any animal magnetism which passes to the patient. They claim that if the patient puts himself in a perfectly susceptible mood, he will obtund his own nervous sensitive end organs. They claim that by practice they have learned how to best perform the operation. To practice hypnotism pure and simple is undoubtedly a dangerous thing to do and when the best hypnotists, that is the men who are scientific in the pursuit, will tell it is not dangerous for the novice, they may cause incalculable harm to the patient. No one can use it not having learned how.

I do not believe you can destroy sensibility in any one without a chance of harm befalling him, but the chance is very much reduced and small indeed. I do not believe the essayist ever intended that you or I should ever entertain the practice of hypnotism. The first step should be cultivated. You do not need to call it hypnotism, only suggestion. You impress the patient that you are not going to hurt him and it will not be severe at all and you can do for him more than the man who has not got his confidence. That is a suggestion.

I attended a seance of hypnotism one day last week. It may all be a fake, but I don't believe a man could run needles through me if I could feel pain and were playing hypnotist. I do not think it is an especial advantage to the patient. I do believe a little suggestion on the part of the operator goes a long way in relieving pain.

DR. HARTZELL, of Minneapolis: I have had opportunity of noticing this wonderful force that we have which allows ourselves to control ourselves and only regret it has been termed hypnotism. Suggestion is the true name which we should incur in ourselves and patients. It is a recognized fact by the whole commercial world that suggestion is one of the most wonderful influences in doing the ordinary business of life. Notice the life of a child as soon as it is born. If the mother says, "Well Charlie says the child is bashful and does not make up with strangers," he will always be a bashful child. On the other hand if she says "the child is not bashful and will make friends with everybody" the child will accordingly.

The merchant recognizes it, walk down the street and you will find that they are tearing out all their old store fronts and are putting in large plate-glass windows and are displaying their wares to every passer-by. Same with the coffee vender by the aroma of the coffee you are enticed to partake.

I had the opportunity of observing the manipulation of one or two men who have disturbed the common atmosphere of state ethics in the past three years in the west. While entirely out of sympathy with these men in what they taught I am a firm believer that suggestion personally handled in the hands of the dentists is one of the most useful elements that we use in practice to control our patients. Not hypnotism, but suggestion.

DR. SWEETNAM, Manistee: I have practiced hypnotism in dentistry. I have extracted whole sets of teeth with the use of it. I have hypnotized a patient to have a surgical operation performed at some other place. I do not practice hypnotism on account of the deep-seated prejudice against it which has not been reduced to a science. While I have noticed this state many times it was in ignorance, as I did not know what caused it, I know we can do these things without hurting the patient.

DR. J. TAFT, Cincinnati: I have nothing to add to this subject. You all know about as much about it as I do. There is a very great difference of opinion of the different members of the profession in regard to it. Those who have investigated it seem to like it; they do not know how it is accomplished, nor can they control it. In some cases it is all right but in others it is no good. It is as you all know, some persons have a power of influencing patients which is not possessed by others. It is merely a differ-

ence in the individual. Dr. Barrett would so control his patient as to render him comparatively painless. We all know that patients treated in the same way will make much different manifestations.

These experiments which are made and have been related seem to show beyond the ability of any one to favor the contrary, that there is absolutely by this process immunity from pain.

It is not sufficiently plausible to warrant its use as a general practice and even those who have gone into it must, as the last speaker intimated, become more and more conscious of all this opinion. It is also true that he should wish to attain the highest knowledge of all things which he practices. The fakirs and charlatans will use it as long as they make it payable. I do believe, however, in the personal influence of one person over another, and I believe it is perfectly common and right for any one to influence his patient as far as he can, for his benefit. Whether it is by sympathy or some unknown influence may be the difference of opinion among you all.

It ought to be a study of every one, what can I do to investigate the pain which is connected with the teeth and mouth? What influence can I use, should be the study of all. I have very little sympathy with common hypnotism as an influence of general utility or general practicability.

DR. JAMESON: I do not wish to be misunderstood as to the meaning of my paper, I did not mean hypnotism nor did I make any suggestion as to such.

(To be continued.)

ALL SORTS.

Insulation and Cataphoresis.

Dr. W. V. Ames states that "if you have an operation performed in your own mouth, it is astonishing to find how readily you can get leakage from the cavity to the edge of the rubber-dam and detect it by the tip of the tongue. The tying of ligatures is objectionable. If you can cut holes of small size in the rubber-dam far enough apart, having the rubber as heavy as you can use conveniently, with plenty of elasticity in it, so that it will hug the neck of the tooth closely, I believe it is

wrong to apply a ligature about there at all, because in that way you draw the edge of the rubber from where it naturally tends to hug the tooth and create a leak where you would not have one if you did not use a ligature. Unless the ligatures are steeped in melted wax, or thoroughly saturated with chloro-percha or something of that sort, the ligatures themselves are the means of conveying the current around the neck of the tooth to some point where there is gum contact, in that way causing a leakage. The best insulation material that I know of, better than wax, gutta-percha, chloro-percha or anything of that sort, is oxyphosphate mixed a creamy consistency, flowed about the margins everywhere near the cavity that you are about to work upon, and sometimes you can make a regular box cavity out of a proximal cavity which is naturally a bad one to work upon. The cavities that are often spoken of as being thoroughly out of the range of possibility of this procedure are those deep proximal cavities where we cannot get rubber beneath the gum margin and effect insulation in that way. After you have packed gutta-percha and gotten the gum out of the way, or excised it, and there is no hemorrhage, you can apply the rubber-dam, and if it is not possible to carry the little connecting portion of the rubber which passes between the teeth down beyond the margin of the cavity, simply slit or cut it out, then getting everything fairly dry, mix the oxyphosphate to a thin consistency, flow it upon the adjoining proximal surfaces, upon the lateral surfaces and upon the gum between the teeth. Let it harden and you have simply a box cavity which is thoroughly insulated."—*Extract from Dental Review.*

Eucaïne in Dental Surgery.

In an article on this subject, published in the *Nouveaux Remedes* for May 24th, M. Touchard remarks that the new local anæsthetic, eucaïne, seems to be capable of replacing cocaine and rendering service in dental surgery. It has been used he says, successfully in ophthalmology, laryngology, and dermatology, also in anæsthetizing the mucous membranes. M. Reclus has also experimented with it in surgery, and the results of his experiments have been recently communicated to the Académie de médecine. It has been carefully studied from a physiological point of view by Professor Pouchet, and especially by M. Hernette, who experimented with it in Professor Pouchet's laboratory. The results of these clinical observations and experiments, says M. Touchard, show that eucaïne is a good local anæsthetic employed in small amounts; but, according to Reclus, Hernette, and others, its use should be confined to small surgical operations and to dental extractions. It has, in fact, in dental surgery,

the advantage in enabling the patient to remain either seated or standing.

M. Touchard gives an account of eleven cases in which this anæsthetic was used, and he thinks the results prove that eucaine may be useful in dental surgery.

Its employment, it is said, is preferable to that of cocaine, because of the toxic symptoms which may follow the use of the latter. According to Kiesel, as many as twelve syringefuls of a fifteen per cent. solution of eucaine (twenty-seven grains of eucaine) may be injected without injuring the patient's health in any way.

Opinions on this subject are, however, very much divided, and M. Touchard submits the following comparison between eucaine and cocaine, as much, he says, from a point of view of their anæsthetic value, as from that of their toxic properties: The same general symptoms of poisoning are noticed. Given in equal doses, the troubles provoked by eucaine are not so intense as those caused by cocaine. The action of eucaine on the heart is not superior to that of cocaine. It lessens the number of heart beats and diminishes the blood pressure. When a toxic dose is given a diminution of the pressure is observed. The anæsthesia produced by eucaine is equal to that produced by cocaine as regards the intensity and the duration; it is more intense and of longer duration in the guinea-pig. The toxic equivalent of eucaine is almost equal to that of cocaine. The effects on the heart with eucaine are more rapid and more pronounced than with cocaine. According to Reclus, Legueu, and Hernette, anæsthesia is complete in five minutes after injection; this has been remarked also by M. Touchard. The duration is much shorter than with cocaine, the anæsthesia lasting not more than twenty-five minutes, while with cocaine it has lasted an hour and ten minutes. Eucaine is a vaso-dilator, and cocaine is a vaso-constrictor; the former may often be preferred where there is a predisposition to syncope, while the latter is useful in subjects who bleed easily.

Equal doses being employed, eucaine anæsthesia is inferior to that produced by cocaine, and, although the toxicity of eucaine is a little less than that of cocaine, as it must be in order to obtain an anæsthesia equivalent to that produced by a larger dose, the two anæsthetics are obviously equally valuable. Finally the short duration of eucaine anæsthesia prevents the employment of the drug in long operations.

The conclusions are, says M. Touchard, that eucaine may render great service in dental surgery, and may be employed as a substitute for cocaine; that it is sufficient to use a one-per-cent. solution of eucaine hydrochloride; that with 0.3 of a grain the most difficult extractions may be made; and that eucaine requires careful handling. Large doses, such as Kiesel employed, should be guarded against, for it is not free from danger, as its toxic power is almost equal to that of cocaine.

Testing an Electric Current.

My advice to every dentist who is using the 110 volt system is, to test his wires and ascertain which wires lead to his office. The test is very simple. I will demonstrate it to you. Take a common 16 candle power lamp, such as this one, and wind a piece of wire around the thread screws into the socket. Cover the wire and thread with something that will insulate them; then hold the exposed end of the lamp to a pipe that is grounded (water, gas or radiator), and put the other end of the wire into a lamp socket; then, touching the end of the wire (which should be a covered wire with only the end exposed, to prevent forming a connection with the side and center of the socket, thereby short circuiting it,) to the spring in the center, and then to the side, and your lamp will light as this does. Now that we have found our current, we will determine whether we are working from positive to neutral—the safe current—or from neutral to negative—the dangerous current—by placing this piece of sheet lead on; or you can use other metals, preferably a radiator, filling this glass with water, and adding ten to twenty drops of sulphuric acid. Put into this glass a piece of lead bent, letting it hang over the edge of the glass, not touching the sheet lead; then, on the opposite side, put a much longer piece of lead, letting it hang over so as to touch the sheet lead. Now, we will put our lamp on this small piece of lead and touch the other end of the wire in the socket, and let the lamp burn a few minutes. Now, if this small piece of wire turns black, we are all right, we have the safe current—from positive to neutral—in this room; but if the lead turns white, we have the dangerous current—from neutral to negative.—J. E. KEEFE in *Review*.

Persistent Abscess After Extraction.

I had a case recently which was rather unusual. The patient was about twenty years of age—a young lady—who for several years has had a loose left upper second bicuspid; not at all painful, but simply loose, and it has, for the past few years, seemed to be growing looser without any apparent cause. The pulp was alive. About six months ago I noticed that this tooth was so extremely loose that it seemed to be hopeless. There was much absorption of the socket, beyond all chance of restoration, and I extracted it. I supposed that the discharge of pus, which had been slight, would cease. A few days ago I saw her again and there was still some discharge of pus. Upon probing I struck what was evidently enamel. Taking a hoe excavator I drew down the grinding surface of a temporary second molar, which had evidently been retained

in some unaccountable manner, and the bicuspid had erupted apparently immediately over it. There was very little of the crown of the molar left—perhaps one-eighth of the grinding surface. I never met such a thing before, and it explained to me what had therefore been a mystery.—DR. BROCKWAY, *Items*.

Gutta-Percha as a Filling Material.

In my opinion gutta-percha is the conservative filling *par excellence* for weak teeth, temporary teeth, and senile teeth, either used alone or in conjunction with other fillings. In temporary teeth it is easily inserted for the child, durable, well tolerated and easily removable. In the approximal cavities of temporary molars one stopping of permanent gutta-percha between the two teeth is of the greatest service, and is more durable than amalgam under similar conditions.—*Exchange*.

The Logan Crown Band.

A Logan crown banded around the joint with a band that will not move or slip after being once set, is more substantial even than a Richmond crown. I have made the bands stationary in different ways. When the bite is long, fit the band snugly to the root and let it remain there while you select a Logan crown to fit it. Get one that does not have to be ground, if possible; if this is not possible grind the one you select until it just fits in the band.

Then take the crown and slip a piece of thin platinum over the pin and file it off around the edge until it is the same size as the top of the crown; set the band on the crown; invest it in plaster Paris, pumice stone and white sand, equal parts; solder the band, floor and pin all together, not with a high carat solder, but, on the contrary, with 14K gold solder, or even silver solder. "Why?" Because it will be completely covered with the cement or gutta-percha used in setting it and you do not run so great a risk of checking the crown or "balling up" the floor and band. I know dental brethren that did not place floors in their bands until I suggested the "low carat solder" to them, who now consider it an easy piece of work.

Another way, especially when the bite is close, to keep this Logan band, or collar, in position and not use a floor, is to fit the band in the usual manner and solder two strips of gold across it. Then when set it cannot work up or down. I have seen some very bad cases resulting

where the band alone had been used. Therefore, as it is so very easy to make the band firm and stationary, it seems to me that a dentist has no right to put on a band without some means to hold it in place. The idea of using the strips of gold came to my mind but recently when I had two right superior bicuspid to crown. The bite was extremely close and I used the shortest bite Logan crowns that were made, but the circumference of the roots being large I had to use teeth too long for the space, consequently, I had to grind down from the tops, grind out the cusps of the crowns, and after getting the bands and crowns fitted, found that I had nearly exposed the pins on the cusps and could not take off any more on the tops; I was "up a stump" for a minute as to how I would get the floors in the band. Well, this is what I did. With the rubber wheel used for grinding between teeth I ground grooves across the tops of the crowns on both sides of the pins, and soldered two strips of gold across the bands, to fit into the grooves, and thus countersunk the strips. The thickness of 29 gauge plate would have made the bite too long. This plan worked so nicely that I have used it several times since; besides it saves investing the crown and subjecting it to the blow-pipe.—W. A. HECKARD, *Ind. Dental Journal*.

Impure Chloroform.

Professor Ramsay has, in the pages of the *Nineteenth Century*, taken the public into his confidence concerning the importance of the use of pure anesthetics. It is not very long ago that a similar stir arose when the Pictet method of preparing chloroform was brought prominently before the profession. It was hoped that with purer anesthetics the era of safer anesthesia would be with us, but the millennium appears to be even yet deferred. There is no doubt, however, that the purity of the anesthetic is a matter of no passing concern to the patient, and therefore requires heedful attention. The coughing, headache, and vomiting, which follow the use of rough or impure anesthetics can be prevented in some measure by employing drugs free from obnoxious impurities, and so we welcome Professor Ramsay's hints upon the subject. Impurities are classifiable as (1) those of manufacture and (2) those due to decomposition after the drug has passed from the hands of the manufacturer. The first category do not interest us, there are now so many trustworthy makers that chloroform pure, save for a small percentage of alcohol added to prevent spontaneous decomposition, is easily to be obtained. When, however, the bottle containing chloroform is once opened, oxidation readily takes place, with the formation of hydrochloric acid and carbonyl chlorid. Such

bodies cause coughing and painful respiration. Small rooms illuminated by gaslight in which chloroform is evaporated rapidly become filled with irrespirable gases due to the chloroform being burnt, and grave inconvenience is caused to all who are in the room. Ether, according to Professor Ramsay, also decomposes after prolonged exposure to air. As a result a "sharp-smelling compound" is formed, which probably is ethyl peroxid. Cough and an obnoxious flavor are the signs of the presence of this body. Professor Ramsay suggests simple means to maintain the purity of the anesthetic. A little slaked lime in the chloroform bottle will get rid of all impurities. The slaked lime removes the hydrochloric acid, and destroys the carbonyl chlorid, while the mercury oxidizes and so precipitates the peroxid of ethyl, which subsides as a dirty black precipitate. Professor Ramsay's suggestions were called forth by an article published in a previous number of the same periodical by a lady who, having taken chloroform both in England and in India, found that she did so with greater comfort in the East. This observation, interesting enough in itself, was followed by an expression of opinion that if the report of the Hyderabad Chloroform Commission were studied by English anesthetists they would administer the anesthetic with greater comfort and safety to their patients. The president of the Society of Anesthetics, Dr. Dudley Buxton, replied in the following number of the *Nineteenth Century*, and pointed out that the value of the Hyderabad Commission's work lies in the fact that it emphasized the importance of watching the respiration, and so confirmed the teaching of Snow. He contends that the open method of giving chloroform is neither novel nor safe, and he concludes that the pronouncement that chloroform only kills by arresting respiration is not consonant with the present state of knowledge. He takes the opportunity of urging the importance of thorough instruction in the administration of anesthetics, and maintains that a certificate of efficiency should be required by the medical examining bodies.

Dentists as Readers.

It has been a constant source of wonder to journalists, who by virtue of their position are better able to observe the fact than others, that dentists as a rule are such careless, slipshod readers and care so little for the literature of their profession. It is a fact, though it may be a lamentable one, that not one dentist in ten is a regular paid-up subscriber to any dental periodical. It is true a few sample copies during the year may stray into the office and they are probably read in a disjointed, unsystem-

atic kind of way. But how any man who loves his profession and desires to keep along with its progress and development can be content with this meager amount of disjointed literature is beyond the conjecture of those who take a pride and delight in systematic reading.

The literature of the profession is hardly a less important factor in its development than any other element connected with it, and yet it seems to be so much less appreciated. Where would the profession have been to-day had there been no journals to disseminate the valuable knowledge worked out by self-sacrificing minds and given without compensation to the world, that the profession might improve and grow in importance? These white-winged messengers now sail from clime to clime, carrying and bringing valuable stores of scientific lore—a veritable exchange of good things, nourishing to the eager and hungry mind.

A convincing proof of the value of journalism to the professional world was demonstrated a short time ago when the science of cataphoresis first came into practical use. In less than four months after Dr. Morton delivered his lecture before the New York societies, orders for cataphoric outfits were received by American houses from Japan. How did the knowledge of this wonderful development in electrical science reach Japan? By the dental journals, of course. Had there been no journals in existence, how long would it have taken to disseminate the fact of these very important discoveries over the world? It could not have been done so thoroughly as it is in years. Dental literature (and by that is meant largely journalism) goes hand in hand with the college, the society, the manufacturers and other mediums of progress, and if anything, it is often in the lead of them all. Recognizing this fact, it seems that the profession would unite in all it might to uphold and maintain the few journals over the country, struggling for existence, to try to keep the profession above water now while it is being pressed down under the weight of the fast multiplying charlatans and parlors. It seems that if philanthropy cannot move, self-interest surely ought to do so. Can a man keep posted on the political situation of the day and read a daily paper once a week? It is just as impossible to keep posted in a profession by reading an occasional sample copy. Every professional man who takes money for his services and does not give intelligent skill in return, when it can be procured so cheaply, is taking that which is not justly due him. Every man in the profession as a patriotic duty to the profession, should subscribe and *pay for* at least one dental periodical each year, and having subscribed for it, he should read it as a duty to his clientele.—H. H. JOHNSON, *Dental Weekly*.

Treatment of Pyorrhea Alveolaris.

Dr. A. W. Harlan, in a paper read before the N. Y. Odontological Society, and published in the *Cosmos*, gives his treatment of pyorrhea as follows:

"Remove deposits and necrosed bone thoroughly, and then inject the pouches or pockets with, first, for one week, a bichlorid solution, one to one thousand, made with hydrogen peroxid, say one grain to two ounces of the peroxid, and five grains of tartaric acid. Later I use at first a strong solution of trichloroacetic acid for two or three visits, about five to eight per cent. in distilled water. When I find that the case is doing well, say at the end of two or three weeks, I begin to use about a five per cent. solution of alumnol, in water, to which is added about three per cent. of resorcin.

I usually flavor this with oil of wintergreen to render it pleasant to the taste (any other oil will do). I inject this every other day or every third day, until the pockets are closed with a new growth. Where there is no necrosis of the process I use the zinc iodid solutions, one to three per cent. in distilled water. The patient must use, during the whole course of the treatment, either a hydronaphthol wash or boro-glycerol mouth-wash from five to ten times daily.

The hydronaphthol wash is made as follows:

Hydronaphthol	-	-	-	-	-	gr. xx;
Alcohol	-	-	-	-	-	oz. iii;
Oil cassia	-	-	-	-	-	min. iii;
Water distilled	-	-	-	-	-	oz. xx. M

S.—Dilute with water if necessary.

Or a boro-glycerol wash, one ounce to twenty of distilled water. Frequent massage of the gums is recommended. Loose teeth are banded with pure silver, or silver ninety-five parts and gold five parts. Pure water is recommended, and frequent bathing is insisted upon, except in the case of the extremely aged. Personal habits of moderation are advised in all things, especially in eating and drinking. I regard a perfect occlusion as important, and accomplish this by grinding the teeth when it is demanded.

Any intercurrent constitutional malady is left to the medical adviser.

The above treatment, if persisted in faithfully for three months, will generally effect a cure. If it does not, I allow the patient to go for a month, and recommend and give the case a second period of this vigorous treatment for another three months. At the end of that time the subject will appreciate the necessity for following your directions, and with his co-operation the case will yield gratifying results."

For Polishing Plate Work.

DR. T. LEDYARD SMITH gives the following in the *Items*:

"For quickly cutting down or rough polishing rubber or gold plate work, I find no better method than with the porte polisher, run with the dental engine.

By removing the nut, a strip of three-fourths of an inch wide sand-paper or emery cloth may be slipped in the slot, and run as the same would be in a regular polishing lathe, only, this device run by the engine offers a more delicate result, as the instrument and handpiece are manipulated on the plate instead of the plate being manipulated against the polisher, as in the case with the lathe. The difference makes the result very different, and the operation almost a pleasure.

A plate may be rendered ready for a final polish in a very short time, and without the use of file or knife, and with a result clean, delicate and artistic."

Gingivitis and its Relation to Crown-Work.

In an excellent article on this subject, published in the *Dominion Journal*, Dr. S. B. Palmer says: "Gold in the mouth becomes charged with electricity when the metal rests upon gum tissue; like a plate no harm is done when only small portions rest upon the gums or under the gums that portion receives the amount of heat and electricity that is received upon the whole surface. I know from experience that hot water alone produces severe pain on the sensitive dentine below the gum line. That coffee increases the current from the effects of the carbon in the coffee acting upon the saliva. I find that bridges are worse than single crowns, having more gold surface to gather the electricity. Bear in mind that in physics intense heat can be produced by electricity. In animal life the range is between freezing and 100.3—4° above. Cathaphoresis teaches that intense currents destroy gum tissue; feeble currents, for a long period, produce like effects on organized bodies. It is a natural law that gold terminating in a band under the gum causes an abnormal condition as seen in connection with crown work. Perfection in fitting cannot set this law aside. As a remedy for sensitiveness of dentine silver nitrat is the most effectual I have used. Shortening the band, so as not to extend beneath the gum, is usually a remedy for inflammation.

With the above explanation, aided by evolution in practice, with a better general understanding of oral electricity, I will try to make plain why gold fillings are not compatible with dentin in teeth of children, or in deep-seated cavities where the tissue is a conductor, without an insu-

lating lining. As above stated, gold worn in the mouth becomes the positive plate or pole of a battery. During mastication or mingling of positive and negative elements with saliva, gold crowns are highly charged and the current passes into the gum tissue when the band extends under the gums. That is, the gold in contact becomes an electrode. To carry out the correspondence, every gold filling at a point nearest the pulp, or any part of the walls of the cavity which may be the best conductor, is an electrode. Where the dentin is normal, or when the dentin has been protected so as to insulate the current, no harm follows. Where the current continues, dissolution of the lime salt is the result, though it may be years in doing its work. To relieve pulp irritation caused from thermal changes, I have removed large gold filling which was done by different operators, and had given no trouble, nor did they show indication of leakage, and found the dentin covering the pulp decalcified a nice organic conductor. The same principle is active when children's teeth are filled before becoming dense enough to insulate the thermal changes; in this case all of the cavity walls are softened."

Filling for Deciduous Teeth.

Dr. Gilbert suggested the following a few years since, and it is well worth a trial. In filling deciduous teeth, he says, it is often impossible to exclude the moisture from the cavity sufficiently to prevent filling with zinc phosphate, unless the dam is used, which is not always easy by any means. The difficulty of filling may be overcome in the following manner: Place some cement powder upon a slab, also a little of the fluid, and besides these a little chloro-stopping (which is made by dissolving Dr. Gilbert's stopping in chloroform). Make a thin mix of the cement, then add to it the chloro-stopping, mixing in more of the powder until a thick putty-like consistency is obtained; now napkin mouth and dry as well as possible, immediately packing to place and finishing with burnishers.—*Amer. Dental Weekly.*

Hygiene.

Most dentists claim the care and preservation of the teeth should begin with the eruption of the first temporary tooth, but to my mind that is not the starting point. I think every mother should begin long before the birth of her child to follow the laws of hygiene to a letter, by taking plenty of exercise, eating such food as will build up the osseous

system, and then, when the little fellow is launched on the tempestuous sea of life, he will have a sufficient amount of bone substance in the system to reasonably expect good teeth, although the parents may not be blessed with them. I recommend the judicious use of the brush, pick and silk floss. I believe that the use of the brush can be abused. Of course we all advocate rotary motion. I am of the opinion that if we use the brush once or twice a day and then use the napkin with the finger as many times a day, we would not find so much recession of the gums. For a long time the ill effects of wood toothpicks upon the gums have been noticeable. When the teeth lap in such a way that a V-shaped space is left at the gum, if wood toothpicks are used the gums become inflamed and spongy. Food then begins to lodge and tartar to accumulate, until a diseased condition soon appears. If the system is not in good condition, before you realize it a case of pyorrhea alveolaris appears. I find that nitrate of silver is the best thing to be used in the shallow cavities in the temporary teeth, to preserve them and keep them in a healthy condition.

Now a word to ourselves. Do we pay a conscientious regard to cleanliness? Do we sterilize our instruments, our materials? Our patients have a right to the best service we can render under the most favorable conditions. Curtains and hangings often form traps for dust and organic matter. Some men's clothing does the same thing. It is the duty of every man to keep clean, and nothing will aid him more in establishing a good practice than to keep his office neat, clean and attractive.—M. N. MIXION, *Dental Weekly*.

Plastic Fillings.

I adopt the following method in preparing cavities and filling with amalgam. I would here state that I consider it good practice to fill all posterior to the first bicuspid with amalgam. I prepare the cavities with as much care as if I were going to insert gold fillings, and where the edges of the cavity are very frail, and in deep-seated cavities, I think it good practice to mix up a little cement to the consistency of thick cream and flow this into the cavity previous to filling with amalgam, but you must not allow the cement to come in contact with sensitive dentin or near an exposed nerve for it will surely result in the death of the nerve. Always flow first a film of the oxid powder mixed with oil of cloves and birch wood creosote, equal parts; then imbibe excess of liquid with bibulous paper before introducing cement. I have the amalgam ready prepared and insert it while the cement is still plastic. Introducing the

amalgam in the usual way, I use a sufficient pressure to force out the excess of cement. This leaves the cavity filled with a cement lining with a metal finish. I think the amalgam should always be packed in with the same care used in filling with gold, using smooth surfaced pluggers and rotary motion; then finish by carefully burnishing over the surface tin-foil or bibulous paper. This forces out all excess of mercury and compresses the mass in one direction. Then at a subsequent sitting, say at any time after twenty hours, polish off the filling nicely and smoothly with the margins of the cavity, being careful to leave no overlapping material at any point, and especially no fullness on the grinding surface. This polishing can be best done with sandpaper disks or polishing strips, engine burs or corundum stones, same as for gold filling. For approximal fillings bicuspid and molars I am a strong advocate of the use of the matrix, either using two thin wedges forced in between the teeth, one from the outside and the other from the inside, and when the fillings are made these incline wedges can be removed without disturbing the filling.—R. B. ADAIR in *Amer. Dental Weekly*.

The Extraction of Teeth.

In the *Dental Headlight*, Dr. G. B. Clement describes his method of removing the process at time of tooth extraction. He says:

“When you are ready to extract the teeth put fifty drops of aromatic spirits of ammonia in a wine glass of water. This is a reliable, diffusible stimulant. Give it to the patient, and when you see a flush upon the face take out the teeth, then immediately pass the beak of this alveolar amputation forceps right in and clip out the middle septum, pass the flat side in between the periosteum and the bone and clip off all that is necessary to leave a smooth, rounded surface. After the shock of extraction, the patient will not mind the minor operation if it is done immediately. In many cases there will be very little to remove; but whether much or little, you want it away from there; and if you do not remove it, you will have to wait for it to be absorbed. You will have an even surface over which to place your gum sections, and will not have to grind them out to fit over projecting places. In a very few days the gums will have healed nicely, and in from two to three weeks, at most, you can put in a permanent set of teeth, and you can put in block teeth as easily and as nicely as plain teeth. Patients will readily appreciate the advantage of this process over having to go for months without teeth, waiting for the gums to heal.

Another advantage in this method is that there will not be nearly so

much subsequent absorption as when the stage of inflammation is continued weeks and months, for as long as inflammation continues the elements of the alveolar process are being absorbed and carried off. You will find that you will have but little subsequent absorption, and your permanent plate will be permanent. You will find this practice will be of benefit to yourself, to your patients, and I am sure it will be so for the profession.

Woolly Asbestos as an Investment Material.

Woolly asbestos well saturated with water, forms an investment that in many cases fully replaces the usual plaster and sand, with the advantages that it is more cleanly to handle, does not run into the cracks and crevices we desire to fill with solder, and there is no waiting for it to harden. The blow-pipe flame may be safely directed upon it immediately. The pieces to be united, held together with hard wax, may be imbedded in it with the same facility as in plaster and sand. Without a moment's delay, the investment may be dried out and the wax burned off with the blow-pipe, instead of chipping it away, flux and solder applied, and the soldering completed in less time than is usually required for plaster and sand to harden. The investment does not crack, but with as little or even less mass than required of plaster and sand securely holds the parts together. Woolly asbestos is not expensive, and as it can be used over again repeatedly, the cost is trifling. With a little practice its use may with advantage be extended to many cases in which heretofore plaster has been considered essential.—*International Dental Journal*.

A Few Tips in Dentistry.

Great care ought to be taken to prevent the borax from getting between the tooth and the backing, or on the cutting edge of the tooth. The borax sticks to the tooth, and if one grinds it off, it generally chips away and brings a piece of the tooth with it. If the borax is allowed to get on to the tooth, it very often results in small cracks running down the tooth. See that the teeth are quite clean before investing; if hard wax is allowed to remain on, the tooth will discolor when soldering. It is better to scald the plate with hot water, when invested, to remove the wax and make everything quite clean. Before investing, a slight space must be made between the teeth to allow for the contraction of the solder, which is inclined to bring the teeth inwards, and if the teeth are touching before investing, the contraction often fractures them.

In preparing a plate for bands or wires, one is apt occasionally to file out a little too much. Also in restriking an old plate, a space is left between the plate and the band when fitted. If the space is very much, a piece of plate ought to be fitted in when the case is invested.

The main point is to fill up the space, however small, with plate, and not with solder, otherwise the band will draw away with the contraction of the solder, and consequently will not fit the teeth.

The same applies to soldering teeth, the backings of which do not reach down to the plate.—F. MACKENZIE in *Brit. Journal*.

Censurable Practice.

The reckless use of dangerous drugs, local anesthetics, and wholesale extractions of teeth that should be preserved. A practice prevalent and rapidly increasing, and sometimes, through ignorance, is carried to the extent of murder; murder right out, no "heart failure" about it. Bad practice upon a false theory of right and justice, and sustained by a willingness to jeopardize life for small gains, and the *smaller reputation* of being able to *extract teeth without pain*.

The dangerous deadly remedies (innumerable) now on the market are more freely used by the ignorant and uncultured in the profession than the better informed and more considerate, who think it is right to consider well before acting. The abuse is bringing reproach upon the profession, and something should be done to check the evil. Timely and right action on the part of Dental Colleges, National, State and local Dental Associations, could accomplish the result requisite for the good of the human family, and for the credit and honor of the dental profession. The sooner some action is taken in the matter the better. Abuses and hurtful practices should never be sanctioned and indulged because they are freely practiced, and in some localities are popular. For the simple operation of the extraction of teeth, dangerous remedies for the alleviation of pain should not be used, except under peculiar circumstances, and then with a great deal of caution.

I think I can safely venture the assertion that nineteen times in twenty, the pain from introduction of the material in gum-tissue to prevent pain is quite as disagreeable as extraction without anesthetic. The thing important for success and satisfaction in the operation of tooth extraction is the definite knowledge of the anatomy of the teeth and alveolar process, and to be well fortified with forceps suited to each tooth, and elevators that may be requisite under some circumstances. A plain, practical, common sense procedure, based upon a knowledge of the anat-

omy of the parts involved, is more important for success and satisfaction than any one or all the local anesthetics in use. A very large percentage of all of them on the market are *claptrap* productions of no merit, and when used prove a fraud.

Owing to the impression that has been made upon the public mind, that teeth can be extracted without pain by the use of anesthetics, thousands of teeth are sacrificed daily that could be comfortably preserved for years, and possibly through life. Shame upon the profession! If there is not some concert of action soon to rectify the false practice, we will have a toothless population ere the lapse of a few decades.—B. F. ARRINGTON, *Amer. Dental Weekly*.

For Filling Children's Teeth.

As the result of forty years of systematic consideration and demonstration of the line of dental work, I feel confidence in the stability of such teachings as from year to year I have given in my long lecture career, as I believe it to be conceded that "experience" is the teacher of teachers, and it has been *that* from which I have always striven to learn.

I was early impressed with the marked difference dictated by *principles* regarding *all work* done upon deciduous teeth in contradistinction to that done upon permanent teeth, for, with the exception of the *lancing of the gums*, work upon the deciduous teeth is governed by considerations and conditions diametrically the reverse of those which pertain to the permanent teeth. The prominent points, therefore, in relation to fillings are, *First*, That deciduous teeth subserve only a *temporary purpose*; therefore that *ordinary* cavities of decay should be filled in such manner as best comports with the age, dispositions and desires of the little patients, while subserving sufficiently the temporary requirements; and, *Second*, Remembering that, as a rule, the first of filling work in deciduous teeth is associated either with fully formed roots or with roots in connection with which reabsorption has commenced to take place, and that this function is very important and should in no wise be interfered with by undue pressure or other irritation of pulp or surrounding pericementum; and, *Third*, That every consideration in this work should point to the comparatively early loss of *rootless crowns* as the proper and best conclusion of deciduous dentition.

From these three considerations, it is evident that expensive operations are not warranted, because inexpensive ones practically subserve every purpose.

That the youthful years of patients would contraindicate work which required length of time for its doing, not only that undesirable impressions of dentistry may not be inculcated, but that every unnecessary infliction should always be spared the child. That the disposition of the patient should be regarded, temperamentally, and that filling materials should be selected under governance of the varied controls of quietness or restlessness, bravery or timidity, location, posteriorly or anteriorly, liability to attrition or otherwise, possibility of future liability to pulp irritation and consequent need of removal of filling if indicated; and, probably most important of all, with the recognition of at least a certain degree of compatibility of material with tooth structure in all cases, and with this thought in view more markedly just in proportion as the imperfectly formed tooth structure with its soluble, chalky inorganics imperatively demands the most judicious selection of that which shall best subserve the desired end.

And as a final pleasant thought, the possibility that a little brightly shining filling of gold might be a source of pleasure to the little one as a pretty trophy to show papa and mamma, uncles and aunts, and interested playmates, to whom should be given—truthfully the information that “it did not hurt”! *for it ought not to.*

To all this, it is evident that *too much knowledge* of every attribute of our *four* filling materials for children's teeth—gold, tin, amalgam and gutta-percha (porcelain is not indicated) and of our lovely and most useful and desirable “adjunctives” oxochloride of zinc, zinc-phosphate and temporary stopping, cannot possibly be acquired, for just in proportion as one is *thoroughly conversant* with these, just so is the wonderful adaptation of each to the special requirements of every individual case readily recognized and most beneficently and satisfactorily employed.—J. FOSTER FLAGG, *Amer. Dental Weekly.*

Practical Points.

R. B. GENTLE contributes the following to the *Indiana Dental Jour.* :

“Coating the face of a Mellotte metal die with vaseline will prevent the counter-die from fusing with the die.

A vaseline coating on the glass stoppers and the inside of the necks of varnish or preparation bottles will admit of the bottles being easily opened and will keep them free from incrustations of varnish, etc.

In smoothing the surface of wax plates before investing, by the aid of a flame from a Bunsen burner or alcohol lamp, use a chip blower to direct the flame instead of a blow-pipe—it is easier to control.

An easy method of removing gutta-percha points from root canals is to roughen the point of an Evans' Root Canal Drier, heat the bulb and pass the point slowly into the canal. Cool the bulb with a wet sponge, and on removing the point the gutta-percha will come with it.

To treat the root canals of posterior teeth when the walls are broken down so badly that the rubber dam cannot be adjusted, proceed as follows: Prepare the tooth as for a permanent filling. Fill the pulp chamber as far as occlusion will permit. Build a wall of amalgam around this and at a subsequent sitting adjust the rubber dam, remove the seal and proceed with treatment.

To mend a plate temporarily where a tooth or a section has been broken off leaving the pins in the rubber, wash the exposed surfaces thoroughly with soap and water and then with chloroform. After drying thoroughly, coat the surfaces with equal parts of gutta-percha and resin, dissolved in chloroform, lay a thin piece of gutta-percha over the broken surface of the plate, heat over a spirit lamp and press the tooth or section to place.

Oxide of Zinc and Eugenol.

DR. S. BLAIR LUCKIE says in July *Items*:

"I do not wish to claim priority of use, but feel constrained to testify to the satisfaction I have derived from a mixture of oxide of zinc and eugenol alone, not only as an intermediate stratum between the floor of deep seated cavities and the filling, but as a covering to dressings, especially when it is desirable to avoid pressure, and also as a filling where a non-irritating, thermal protector and antiseptic is designated.

If properly mixed, that is, as much of the oxid used as the fluid will take up without becoming crumbly, and a good article of zinc used (I use Hubbuck's), a filling can be inserted that will last as long as the best cement. In the mixing, a condition will appear as though no more of the oxide could be added without producing the crumbling alluded to, but by patting the mass with the spatula, plasticity will return. It will harden more rapidly in the mouth than on the mixing slab, and will retain its quality as a filling material better in the tooth, as what remains of the mix becomes brittle after the lapse of time, while the filling will present good margins and show comparatively good edge strength.

I have now had an experience of over four years with it, and have noticed that fillings in the approximal surfaces of molars and bicuspsids will show no wasting in the least for one, and in some cases, for two years.

It can also be used for a pulp canal filling, by being pumped in the canal and forced to all parts with a cone of gutta-percha, filling the canal antiseptically and producing no irritation beyond the apex.

Ichthyol in Dentistry.

Dr. H. Floris reports having used ichthyol with very excellent results in alveolar pyorrhea, and in painful receded gums. In the former case, the undiluted ichthyol is employed for swabbing the alveolar cavities by means of a pledget of cotton fastened to a gold needle. They are besides syringed twice or thrice a week with a warm fifty per cent. solution of ichthyol, the mouth being also daily rinsed twice with a solution of from ten to fifteen drops of ichthyol to a half-glass of warm water, and after previous massage. In receded, painful gums, and in cases where the teeth are sensitive to change of temperature, touch, sweets, certain fruits, etc., the undiluted ichthyol is painted on the sensitive part twice or thrice a week, with a camel's hair pencil, with the result that in from two to three weeks permanent relief from pain is had. In this respect the preparation is greatly superior to the remedies usually employed, such as silver nitrat, for instance, since it exerts no caustic effect nor causes discoloration.

The writer has also employed the remedy with remarkable results in hemorrhages following extractions, the most severe being rapidly checked by inserting a tampon of twenty-five per cent. ichthyol-cotton into the cavity, and retaining it in place by the usual means.—*Poulson's Bericht.*

Neuralgia of the Face and Eye.

DR. H. D. WELLER, cites the following in *Indiana Dental Journal*:

Mrs. M., aged forty, of a nervous temperament, had a severe attack of neuralgia on the right side of the face, extending to the temporal and frontal regions and involving the right eye. The pain in the eye became so great that she avoided as much as possible engaging in sewing, reading, or any other occupation that required the attentive use of the eye. She finally applied to her physican for relief. After listening to the symptoms as related by her, he advised her to have a careful examination of her teeth made by her dentist. This was done, and the pulp of the right superior cuspid was found to be exposed. As the only other teeth—three in number—in the upper jaw were badly broken down and affected with pyorrhea, the four teeth were extracted and a full upper denture was

inserted in place of the partial plate that she had been wearing. Several weeks have elapsed since the extraction of the teeth and insertion of the plate, and there has been absolutely no recurrence of the facial neuralgia.

If physicians generally would recognize the importance of examination of the teeth in these cases of facial neuralgia a great deal of unnecessary pain would often be spared the patient."

One Way to Make a Gold Crown.

DR. L. WEST describes this method in *Items*:

"Fit the band to the root of the tooth, contouring as required, and place in position. See where it needs altering to give proper occlusion, and with a half round file, or other suitable tool, cut away a little more than is necessary to prevent striking against the occluding tooth.

Fit a cap of crown plate to the end and solder. Trim off the edges and replace upon the root, and mark the places where the cusps should be to give proper contour to the crown and give proper occlusion, etc.

With a round, sharp-pointed instrument make some small pits in a sheet of asbestos, corresponding to the sizes of cusps desired, and with the blowpipe melt the required quantity of gold scrap to form each cusp, and while melted quickly place the handle of the pliers, or anything suitable, on it so as to flatten the top, making small inverted cones.

Place these cones properly upon the cap of crown where cusps are desired, solder to place and finish as usual.

This way of making a gold crown I found to be the quickest, and gives a more natural contour than any I have tried. It is especially applicable to bicusps, and gives a greater thickness to the wearing part than the method of fitting to a bite does."

BRIEFS.

Jewellers' Files are very useful in crown- and bridge-work.

Chip-blowers often exhale an unpleasant odor; to overcome this, place a drop of oil of rose in the bulb.—*H. H. J., Dental Weekly.*

To Roughen Broaches.—When your smooth nerve-bridles get so smooth that cotton-wool will not stick to them, rub with sand-paper.—*F. Mackenzie, Brit. Jour.*

Articulator for Crown- and Bridge-Work.—A pair of broken-beak forceps makes a good articulator for crown- and bridge-work.—*W. H. Bailey, Dental Weekly.*

Ethyl-Chlorid for Cooling Modelling Compound Impressions.—Dr. Vajna, of Budapest, suggests using a spray of ethyl-chlorid to rapidly cool impression composition.

Colorless Tincture of Iodin may be made by adding ammonia water to the ordinary tincture. It contains no free iodine, but is principally a solution of ammonium iodine.—*Atlanta Medical Weekly.*

Perforated Roots.—In root perforation, I have succeeded best with lead points. Make them round pointed and just long enough to go through hole made in root by bur or drill.—*N. A. W., Dental Weekly.*

For Pulpitis.—Dr. Juan F. Orozco, of San Salvador, sends the *Weekly* the following remedy for pulpitis: Equal parts of bromoform and oil of cloves. He says it will give relief when nothing else will.—*Dental Weekly.*

Dental Hemiplegia.—The *Virginia Medical Semimonthly* quotes the report of a case by Dr. J. D. Eggleston in which hemiplegia was promptly and completely cured on the removal of a sound though sensitive "wisdom" tooth.

Man's Failures are of more benefit to him than his successes. The one reverses the current and starts anew thoughts and renewed action. The other glides into an indifferent ease, and rests upon a glory that will decay.—*Amer. Weekly.*

Filling for Temporary Teeth.—To fill temporary teeth, mix small amount nitrate silver with cement. It makes cement very black, but seems to make it harder, and when worn out the cavities will be left hard and black from the effects of the nitrate.—*N. A. W., Dental Weekly.*

Anesthetize Dentine.—To anesthetize sensitive dentine—place a pellet of cotton in the cavity saturated with carbolic acid and dipped in crystals of hydrochloric acid. Blow hot air for a few minutes and a layer of dentine will be found to be anesthetized.—*T. P. Hinman, Dental Weekly.*

Thin Rim Disks.—To make thin rim disks at a moment's notice: Place a disk on the mandrel and revolve it rapidly, at the same time holding an instrument against the part nearest the mandrel and passing it outwards towards the edge. A narrow rim of grit will be left.—*T. P. Hinman in Dental Weekly.*

To Remove Teeth from an Old Vulcanite Case, put a little wax on when heating in the gas. This will soften the vulcanite and render removal of the teeth easy. Another method is to boil the plate in water until soft; this will do away with the unpleasant smells with which we are all familiar.

Save all your Surplus Amalgam and roll into small pellets of different sizes while soft. These will prove very useful subsequently, when filling large cavities, by embedding them along with the soft amalgam. It reduces the tendency to shrink, which all amalgams have, and it is a saving of material.—*F. Mackenzie, Brit. Jour.*

To Separate Lead and Zinc.—When zinc and lead have become mixed, make a cone-shaped mould in the sand and pour in the melted metal. When the zinc has set, lift out of the sand, and the lead, still melted, will remain at the bottom; or leave the whole mass to set, and cut off the lead afterwards.—*F. Mackenzie, Brit. Jour.*

Add Ammonia to Wash Water.—A few drops of strong ammonia water added to the water in which you wash will greatly facilitate the removal of grease and of blood. About half a teaspoonful to an ordinary basin of water will be the right proportion. Of course, you must use soap as well.—*Medical and Surgical Reporter.*

To Keep Cavity Dry.—To keep cavities dry without the dam: Place hard rolls of cotton over the saliva ducts; roll small napkin made of shirt bosom linen into a long rope and place around the tooth. Place a rubber-dam clamp on the tooth which will hold the napkin in place leaving both hands free.—*T. P. Hinman, Dental Weekly.*

To Remove Gold Crowns.—Some time ago Dr. Dunn, of Chicago, gave us the following for removing gold crowns:

Cut an oblong hole in the crown just over the stump of the root, and with a narrow chisel wedged in between the inside of the crown and stump, the crown can be easily removed.—*Amer. Dental Weekly.*

EDITOR'S NOTES.

Tri-State Dental Meeting.

THE long looked-for meeting of the Ohio, Michigan, and Indiana Dental Societies has been held and adds another mark to the history of dentistry. It was a grand meeting and those who

failed to attend missed more than they will ever realize. The weather was perfect and the accommodations at the spacious Hotel Victory were all that could be desired, for the managers, Messrs. Peterson and McCreary, did everything in their power for the comfort of guests. There were over 600 in attendance, and we have never seen so many ladies, the better half of the profession, present at any one meeting.

The papers, discussions, and clinics were of a high order, and the special entertainment, the concert by the Appollo Club, of Cincinnati, was universally conceded to be the finest of the kind ever heard. The meetings at Detroit in '95 and this meeting at Put-in-Bay, prove that tri-state meetings are successful, and the influence on those who do not attend societies regularly, must be marked.

"Ohio has done herself proud," seemed to be the general verdict of those present, and the success of the meeting was due to the indefatigable efforts of the committee, Drs. J. R. Callahan, Cincinnati; G. E. Hunt, Indianapolis; and J. Ward House, Grand Rapids.

There is a great advantage in meeting where those in attendance can be under one roof and where there are no outside attractions to detract from the meeting. We would suggest Put-in-Bay as a model location for some future meeting of the National Association.

Dentists in the Army and Navy.

THE bill introduced into Congress, providing for the establishment of dentists in the army and navy, failed to pass, being unfavorably reported. Editor Catching is of the opinion that the bill was prematurely introduced and he adds:

"Congress needs to have the voice of the dental profession before it will see the necessity for such a measure.

"The failure of this bill should not deter us. We must get ready at Omaha for action, and for action in concert. We must show Uncle Sam that we mean what we say. Then he will listen respectfully."

Dr. B. Holly Smith in a letter to the *Dental Weekly* says:

"This abortive effort has, however, made several things

plain: (1) that any measure introduced must be an expression of the best thought of the profession; (2) it must receive the united and enthusiastic support of the same; (3) it must be placed in the hands of an experienced legislator.

"When the measure is fairly launched during the next session of Congress, it will then be time for every man to use his personal influence with his representative, for unless we have a large majority of the law-makers prejudiced in favor of such legislation we will still have to reckon with the Surgeon-General."

Let the Ohio State and other societies that appointed committees on appointment of dentists to the army and navy, reappoint these committees and work with renewed vigor in this direction. Let the National take the matter up and receive the support of all state, local and city societies and individual assistance from members of the profession. Combined effort must bring this needed legislation or we'll know the reason why.

A New Board of Dental Examiners for the State of Ohio.

GOVERNOR BUSHNELL has appointed a new Dental Examining Board, consisting of A. F. Emminger, Columbus; O. N. Heise and M. H. Fletcher, Cincinnati; W. A. Price, Cleveland; L. P. Bethel, Kent. The Board met at Columbus, May 31st and organized, A. F. Emminger being elected president and L. P. Bethel, secretary. Eleven candidates presented for examination, one of whom reached the required 75 per cent. and was granted a certificate. Several others passed creditably but did not quite reach the required per cent. The policy of the Board will be to carry out the law to the letter and deal justly with every one. Candidates will be given a fair examination and those coming up to the required standard will be granted certificates while those who do not will not be given certificates; merit alone must determine the candidate's fitness to practice. Hereafter the Board will require actual operations in operative and mechanical dentistry in addition to the examination in theory.

Some dentists have a misconception of the duties of the Examining Board, thinking that the Board should go about seeking illegal practitioners. It cannot do this. The members of the

dental profession must notify the Board of illegal practitioners and then the duty of the Board is to bring such men to justice, and this will be done without delay.

CORRESPONDENCE.

Ohio State Board of Dental Examiners.

MR. EDITOR:—Inasmuch as important action was taken by the Northern Ohio Dental Association, at a meeting at Put-in-Bay Island, June 23, 1898, which concerns the dental profession generally, I herewith append a duplicate of a letter to His Excellency Hon. Asa S. Bushnell, Governor of Ohio, which is self-explanatory.

W. T. JACKMAN.

The Hon. Asa S. Bushnell, Governor of Ohio, Columbus, O.

DEAR SIR:—At a meeting of the Northern Ohio Dental Association, held at Hotel Victory, Put-in-Bay Island, last week, the Corresponding Secretary was requested, by a unanimous vote of the association, to extend its thanks to you, thus assuring you of its appreciation of the wisdom manifested in the appointment of the new State Board of Dental Examiners. It is believed that said Board is entirely satisfactory to the dental profession of the State, and that it will conserve the interests of both the people and the profession in that none but competent persons will be licensed to practice dentistry in the State.

Most respectfully submitted.

W. T. JACKMAN, D.D.S., *Cor. Sec.*,
106 Euclid Ave., Cleveland, Ohio.

The answer to the above is here appended :

EXECUTIVE DEPARTMENT, COLUMBUS, O., June 29. 1898.
Dr. W. T. Jackman, 106 Euclid Ave., Cleveland, O.

MY DEAR SIR:—I have the honor to acknowledge receipt of your kind favor of June 28th, transmitting the sentiments of the Northern Ohio Dental Association, in relation to the recent appointment of the new Board of Dental Examiners. Assuring you of the pleasure it gives me to receive this endorsement of my action.

I am, very respectfully yours,

ASA S. BUSHNELL, *Governor.*

SOCIETIES.

National Dental Association.

THE first annual meeting of the National Dental Association will be held at Omaha, Neb., commencing at 10 A. M., Tuesday, August 30, 1898. GEO. H. CUSHING, *Recording Secretary*.

N. B.—I wish to state, owing to the conflicting stories in circulation regarding lack of accommodations at Omaha, that I recently visited there to make a personal inspection of the hotels, and found the accommodations ample and rates reasonable.

J. N. CROUSE, *Chairman Executive Committee*.

This promises to be an especially good meeting, and it is hoped that all members and delegates possible will attend.

National Association of Dental Faculties.

THE annual meeting of the National Association of Dental Faculties will be held in the Mercer Hotel, at Omaha, beginning Friday, August 26th, at 2 P. M.

It is to be hoped that all members of the association will be present at that time.

The Executive Committee will meet on the preceding Thursday, at 2 P. M.

Colleges are notified to present their business at the first session of the committee. By order of

B. HOLLY SMITH,
Sec'y.

JONATHAN TAFT,
Chairman Ex. Com.

Missouri State Dental Association.

AT the thirty-fourth annual meeting of the Missouri State Dental Association, held at the Planter Hotel, St. Louis, July 5-8, 1898, the following officers were elected: Dr. F. M. Fulkerson, Sedalia, president; Dr. F. Fletcher, St. Louis, first vice-president; Dr. W. D. Reed, Mexico, second vice-president; Dr. B. L. Thorpe, Billings, corresponding secretary; Dr. H. H. Sullivan, Kansas City, recording secretary; Dr. J. A. Price, Savannah, treasurer.

B. L. THORPE, *Cor. Secretary*.

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CONTRIBUTIONS.

The Cause of Destruction of Pulp and Gold Crown by Amalgam.

BY S. B. PALMER, M.D.S., SYRACUSE, N. Y.

IN the July OHIO JOURNAL Dr. McLean cites an interesting case in which a large amalgam filling was inserted in a lower third molar and the tooth then crowned with gold. After a lapse of four years patient returned with gold crown disintegrated, porosity everywhere noticeable, pulp dead and incipient decay around a part of amalgam filling. He asks whether the result was due to mercuric action or what?

In answer to Dr. McLean's question, I will give my own opinion, and hope to be enlightened by answers from others upon the same subject. The above question represents a compound of conditions, which we will first analyze and find the two causes which produce opposite results occasionally witnessed, namely: We know that gold and amalgam are compatible when in contact, as a filling in a cavity, where amalgam is used at the gingival border as a guard filling, also for filling cavities which are so far under the gum tissue as to prevent the application of rubberdam. I mention this fact because experience teaches that there is no failure where amalgam is used to a point where the rubber

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can be adjusted. The cavity proper should be filled with gutta-percha until a convenient sitting could be had to fill with gold. Under those conditions amalgam is improved by its connection with the gold. The amalgam as a mass is oxidized by the action of the gold, that is, the local currents which play upon the surface amalgam plugs occasioned by the amalgamated elements, being positive to the less amalgamated cuttings of the alloy. No one finds a joint or seam at the junction of gold and amalgam. It cannot occur because the mercury amalgamated with the gold surface which makes a solder so to speak which is finer than the amalgam. Thus the gold by mutual induction preserves the union, which is quite the opposite when amalgam is added to a plug which has once set. With all possible care in filling, the solder is composed of more mercury than other portions of the filling and it becomes a positive strata to be dissolved by the electro-chemical action of the more negative fillings. It is my practice to place in the joint one or two thickness of gold foil, there the union is the last to give away. It is not my desire or intention to crowd practice in this answer. I wish to distinguish between the conditions leading to opposite results, thus I illustrate by facts obtained in practice.

The above named conditions embrace most of the operations performed with gold and amalgam. As will be remembered all include positive contact of the metals. Whatever currents are generated are confined to the plug; and still more, such currents are lessened by mutual induction. To illustrate: iron is preserved by being galvanized with zinc. Should the zinc be separated the thickness of paper from the iron it would soon be dissolved by a current from the iron; by the union the iron and a portion of the zinc is preserved. Turning to the other condition we have a gold shell covering amalgam, not in absolute contact perhaps insulated by a thin lining of cement corresponding to a porous cup in a battery. It is a fact that gold in the mouth during eating or masticating food becomes charged with electricity. In case of a gold plate the current passes through the metal into the tissue without harm or perception. Not generally so when gold crowns pass beneath the gums, as a large portion of crowns give testimony, by redness of gums and inflamed dentin. Crowns which support bridges are worse than single crowns in proportion to the surface of the gold exposed. I have worn two bridges

and three single crowns, representing thirteen crowns, for eleven years past; my experience amounts to positive knowledge not dependent upon books.

It is well known that amalgam fillings discolor gold fillings in close proximity, also gold crowns where the metals are not in contact. In either case a current passes from the gold to the amalgam which acts upon the latter, the salts of the metals pass through the liquid and become galvanized upon the gold and it is consequently tarnished. I will give farther proof of such currents as obtained by experiments upon a second superior molar in my own mouth. The molar had a fair sized coronal cavity which for several years was used for experimental purposes. As the enamel border was firm and cavity not deep, no discomfort was experienced by filling and refilling. The tooth stood alone upon the right side of the jaw and supported a clasp plate or rather steadied an atmospheric plate. The clasp was of gold and wide like a band; that is, it extended near the end of the tooth, some portion of the time having lags attached to prevent elongation of the tooth. I do not remember the number of times fillings were inserted. I will report four, gold could not be detected. I should say the test of current was by taste, where the tip of the tongue covered the end of the tooth resting upon filling and clasp. Tin gave faint evidences for a day or more, after which nothing could be perceived without some inimical or exciting liquid was used. Amalgam constantly gave evidence of a current and a metallic taste until it was worn so as to become covered with an oxid coating. The last plug was of copper amalgam, which never ceased action. The tooth was lost by absorption of the process. The filling had wasted one-half its thickness, the color was black and surface roughened. Within six months I removed an amalgam plug from a first inferior molar coronal surface, filling was large, the enamel walls were good and plug in good condition, but gave a metallic taste. A cement filling is now inserted awaiting a gold or porcelain inlay.

To return to the case under discussion. The conditions which led to the release of mercury consisted in the formation of a galvanic cell, the amalgam being the positive element. Instead of the plug being oxidized as would be the case where absolute contact is had, the plug was decomposed, the mercury either in solution or vapor was deposited upon the negative pole with

results as stated. I would not hesitate to cover an ordinary amalgam filling with a gold crown, but would try and prevent slight contact. The moisture in a thin lining of cement is sufficient to allow electric currents to pass through. I would use chloro-percha to cover the metal before using the cement. I am not prepared to believe in idiosyncrasies to the extent of a friend (late physician) who believed in the potency of mercury if carried in the pocket, even when hermetically sealed in a glass tube. The late Dr. Barnes of this city once used chloroform upon a pledget of cotton for smoothing the surface of a gutta-percha filling. The lady became insensible, and remained in the office two or more hours before she could be sent home in a carriage.

The fact that the amalgam filling gave unfavorable symptoms prior to crowning, is evidence that there was a physiological action of mercury. It is probable that the mercury had a stronger affinity for gold than for organic matter. My investigations on this line leads to the belief that many constitutional disturbances come under the universal law of positive and negative, or change in polarity, as demonstrated in physics. It is a matter of history that on celebrating the opening of one of the Atlantic cables, a message was sent from a battery composed of an ordinary *gun cap* and a few grains of zinc. Signals of this character are made by deflection of a needle carrying a small mirror, etc. The point is this, all the tons of copper contained in the cable is rendered positive or negative at the touch of the key. I regard the human system an organic body delicately poised and liable of being thrown into abnormal conditions. Changes of temperature of one portion of the body may produce neuralgia. Minerals taken into the system are also causes, especially mercury as manifested in ptyalism which I regard as establishing almost a permanent abnormal polarity which is not easily corrected. It is upon this principle that I make allowances for individuals who manifest idiosyncrasies which, with my knowledge or from my standpoint, I have no right to dispute.

The Philosophy of Tooth Forms.*

BY ALTON H. THOMPSON, D.D.S., TOPEKA, KANSAS.

THE external anatomy of the teeth, and the philosophy and functional purposes of tooth forms is of great importance to dentists, for the reason that they have much to do with the forms of the human teeth in their every day work. It is not too much to claim that a knowledge of tooth forms is of supreme importance to the dentist, and secondary to no other branch of his professional training. Therefore I have chosen as my topic the philosophy of tooth forms with relation to their functional requirements.

This study will lead us into the field of Comparative Dental Anatomy, for to understand the teeth of man, the philosophy of their forms, and their functional office, it will be necessary for us to study lower forms of life that we may follow the paths by which the teeth of man have reached their present stage of development. By this study we learn the process of the evolution of tooth forms and their adaptation to functional requirements.

We observe first, that the main function and purpose of the teeth throughout the animal kingdom is to seize and reduce food preparatory to its digestion. The teeth therefore belong to the alimentary and digestive system. For this purpose they were called into being and by it they have been maintained in purity of form or have been infinitely modified. That the teeth have been greatly modified since the first primitive tooth appeared is amply demonstrated by the endless variety of teeth that have come into existence in the world in all ages,—taking extinct and living forms of animal life altogether. This great variety is due to the variations of food presented to animals which led to great changes in the masticating apparatus. These changes were necessary to adapt animals to changed environments in order to the preservation of the lives of species. The food environment is one of the most potent influences in dictating the course of animal life. Animals must adapt themselves to its changes or perish.

*Abstract of Paper read before the Tennessee Dental Association, at Lookout Mountain, July 6th, 1898.

Hence many kinds of teeth have arisen in response to the demand of new food environments, for the resources of nature are infinite. When new conditions are to be met, her invention is never at a loss and her capacity for change is boundless.

If food selection has therefore dictated tooth forms, it follows that the teeth have been specially accommodated to the various kinds of food employed; *i. e.*, the teeth have been adapted to the food and not the food to the teeth. The food was made first and the teeth afterwards. Function has developed structure; tools have been adapted to material. Therefore the teeth are, functionally, tools made to reduce food as their primary purpose, although they often perform secondary offices for which they are specially developed; as in the tusks of the elephant, walrus, wild boar, or musk deer, and others.

To begin with the lowest type of teeth we find them adapted to the lowest function of food reduction, *i. e.*, prehension. This is the first element of the masticating function and as it is a simple process and requires but simple implements, we find the teeth are strictly prehensile, of simple conical form, long, curved and sharp, for the mere seizing and holding of prey. This simple form is found in the lowest and primitive vertebrates, *i. e.*, in the fishes and reptiles in which prehension is the only dental function performed, for division and mastication of food are yet unprovided for. The food is merely seized and swallowed without mastication. The single conical tooth is the earliest type in vertebrates and is found all the way down through succeeding forms even to man, in whom the canine or cuspid presents the typical or conical form, although very much reduced on account of the prehensile function being usurped and performed by the hands. In the carnivora, it is largely developed for seizing prey and tearing flesh, while in the herbivora it is reduced to an incising tooth, or is absent altogether. In some species the canine is largely developed as a weapon or implement, but for secondary purposes. Its primary function is prehension and in accordance with this simple office it has had a simple form from the earliest to the latest stages of animal life.

The next element of dental function is the division of food. This is performed in most vertebrates by the incisor teeth which are specially developed for cutting purposes with a wide, sharp edge. This tooth is a modified cone in which the base is flattened

to a wide cutting edge as if it had been compressed. This cutting form of tooth is found, singularly enough, in a highly developed type in early invertebrate life,—in the sea-urchin, which has highly developed, continuously-growing incisors set in true alveoli. In some kinds of fishes, as *sargus*, the anterior teeth are of true incisor form but are mere denticles anchylosed to the jaw, and are not set in true alveoli. The highest form of incisors is that of the herbivora, as the ox and horse,—in which they are specialized for cutting purposes. The incisors of the carnivora are much reduced, are merely rudimentary in fact, as the cutting function is usurped by the long bladed premolars and molars. This is a remarkable provision of nature for the vicarious performance of a function. The tubercles on the true crushing teeth are raised into stout blades to cut flesh and divide tough tendons for they are nearer the center of the greatest strength of the jaws, where the great occluding muscles are attached. In man, the incisors proper are the cutting teeth and they are well developed for that purpose.

The crushing and masticating function is performed by the two classes of the molar series, *i. e.*, the premolars and molars. The premolars are especially the crushing teeth. Referring to early forms we find that crushing teeth developed in some fishes,—but merely for crushing and not for grinding. Some lizards also have tuberculate teeth, but is not until the stage of the mammalia that we find the true masticating function brought to its highest development as an auxiliary to digestion. In some low mammals, as in the sloths and armadillos, we find a low grade of mastication, with simple molars with flat facets on the crowns. As we advance in the scale, the function becomes more complicated and the teeth more highly developed. The highest form of masticating teeth we find in the herbivora, in which the crowns are extended laterally in response to lateral strain due to lateral movement of the jaw. By folding and creasing of the crown and unequal wear of the dental tissues, the occlusal surface presents a constantly rough face for the more effective masticating of the resisting vegetable fibre of the food. In this class mastication is a highly elaborated and important function and we consequently find the teeth highly developed. In the ruminants especially, it is not enough that the food is masticated once, but it is regurgitated from the stomach and chewed a second time before its solution can be effected and the nutritive elements it

contains be extracted. In the true carnivora on the other hand, the tubercular teeth are totally aborted and blades raised from the tubercles of the premolars to cut with. The simple food, the flesh of animals, requiring but simple manipulation and no mastication at all. But as the carnivora diverge from the habits of the true cats and begin the employment of a mixed diet, tubercular teeth appear—as in the dogs, bears, etc.—which are omnivorous. Man is of this latter type, for he is omnivorous and has simple tuberculate teeth.

The teeth of man are much degraded on account of disuse and the inherited effects of the loss of function. They are indeed quite primitive in type as regards many of their functional features. The incisors are highly specialized, it is true, and still present a well developed type of cutting implement and their functional features are well preserved. But the canines, while still retaining the prehensile type, are much reduced and are merely rudimentary in form. Their functional purpose is completely usurped by the hands in man so that they no longer perform the office of prehension. They are useless for seizing prey, as weapons of warfare or as implements for secondary purposes. The bicuspid is the crushing tooth proper, and their functional forms are well preserved in man, but their effectiveness is diminished on account of the structural weakness of the crowns. The molars are much reduced in man, recalling the simple quadrangular type of molar of the early generalized mammals found in the cretaceous beds of the west. The human molar is neither carnivorous nor herbivorous, but is a degraded omnivorous type, the effectiveness of which, for even a mixed diet, is very poor. The crown resembles that of the molar of early geological types before differentiation began which ended in highly specialized types. The reduction of the molar in man has, of course, come about through the loss of the masticating function owing to the lessening of the demands of resisting foods, and by the artificial softening of foods.

The philosophy of tooth forms throughout the animal kingdom is very interesting and instructive as evidencing the adaptability of the teeth of varied and different animals to the various foods employed. The extreme forms, even the monstrous excess of form in teeth adapted to special secondary purposes, exhibit in a marvelous degree their special susceptibility to change and a versatility that is unusual in animal structures.

The Dentist's Posture at Operating Chair.*

BY ELIZA M. MOSHER, M.D., ANN ARBOR, MICH.

I AM not a dentist ; I would feel myself an interloper were it not for two reasons : One, several years ago it became my duty to extract a large number of teeth that brought me into your line a little, and the other reason is the importance of the subject which we are to consider at this hour—" Whether the position of the dentist over his chair is one which is harmful, or which in any way tends to injure his body or interferes with his symmetry." That we cannot decide until we have examined the body a few moments from the standpoint of mechanics. In order to take up the subject from this view, I shall use a model of the trunk which I made several years ago.

Is there any posture which we may call normal, one which is better than all others, one toward which the body should ever be turned ? In order to find out whether there is, we immediately think of the two organs which are constantly at work, the heart and lungs.

We say if there is a normal posture it must be one which gives to these two organs the largest space and least friction. We find that when all the other organs of the body are in their best place and are active, with the least friction and are filling up only their space, that that position is the one which it was intended man should keep. When the body rests firmly on the balls of the feet and lightly on the heels, when the pelvis is down in front and up on back carrying the gluteal weight high, in that position we find sternum and spine as far apart as is possible for them to be without muscular action, then the heart and lungs have the best amount of space.

Commonly one arm balances another, but from before backward it is not symmetrical. It was a difficult problem for me to find out where the balancing weights were placed until one day I discovered it while studying a little statuette, that upon the position of the pelvis depends the depth of chest.

When a person stands his weight upon the heels and not on the balls of his feet, the chest is flattened and the gluteal region

* Report of a lecture delivered before the Tri-State Meeting at Put-in-Bay, June, 1898.

is lowered, and when the gluteal weight is high the sternum must go forward away from the spine, and we have lack of space for heart and lungs to do their work.

Every organ in the body is at its best position when in this normal position, the spine is in the upright and has normal curves and is in its best position of strength.

Upon the position of the feet under the body, and the pedestal beneath same, depends the shape of the body above. Upon these two things depends the ability of the body muscles to work at good advantage. You change your posture to suit the work you are doing. Part of the time we remove the weight on one foot and use the other as balancing weight. In working on the right foot we throw out the left to balance the body, and *vice versa*. Upon the position of feet and pelvis depends your ability to use your muscles to good advantage.

The body by remaining in certain postures continuously or using certain muscles repeatedly, the tissues on the one side become permanently short and the tissues which have been used long become lengthened and the inter-vertebral substance thins on one side and thickens on the other, so that the body attains a permanent shape into the position which it occupies most often, so that you and I, if our eyes are open to the subject, can, with perfect ease, tell in what position any individual occupied in his work; in other words, the trade mark of his work is built into his body. Whether harm comes from that is, to a certain extent, worth our while to consider. The body is constantly exposed to conditions which are not favorable to it (and yet it does not do its best work when it is interfered with) and built over into a shape which places its organs at a disadvantage.

The practical question which comes up this afternoon is this: The dentist, almost more than any other workman is obliged to occupy a position over his patient which is far from the normal position of the body, that in which it can do its best work. In making this study, it has been very interesting to me to see the influence first on the spine. It is his good fortune that he is obliged to change from one foot to another, but he puts more weight on the left foot. It is his right hand which is steady and he must turn his face to the patient. Perhaps you do not know what it does to the back and various parts of the body. From a study of it upon a good many individuals, I find that the spine

becomes permanently twisted outward and to the left, the ribs project backward on the right and recede on the left. At the upper part the twist continues at the top, so we have a rotation of the spine upon its own axis. Then you find that he has, in addition to this, a low left shoulder, which makes the two sides not symmetrical. The anterior wall of the body is shortened very materially. The space from the pelvis to top of the chest is shortened and flattened, flattened on the right and pushed out on the left. Now, in that position the harmful effect is the influence upon the lungs, especially upon the young man who is not extra strong. The indoor life and flattening of chest is, of course, a great wrong. Using muscles on one side and which are not developed on the other, puts the body at a disadvantage.

The profession of dentistry has now become so important and is so influential, it is bringing into it the best of our young men, and also ladies. It seemed to me reasonable that we should consider this matter and see if there is not some way to prevent it. There are three suggestions which I would like to make, and which are worth following:

1st. Cannot dentists usually see if it is not possible to adopt some position, varying the position of the patient more than they do in order that they may vary their own position; so many young men lose their health in this work. I believe this can be overcome; arrange the patient a little lower in the horizontal or some other change which will enable you to occupy a position of body during all these hours of hard work which shall be better for the work of your bodies and shall give to your children greater strength than from parents who have been injured in this way.

2d. In the schools teach the students to use both hands equally. Dentists have done it. Our young men are not being systematically taught to use both hands in their work.

3rd. I recommend that our students in the schools should be required to take exercise every single day so as to overcome and remedy the harm which shall come from this peculiar posture.

There is no reason why this should not be done. If every dentist would begin to take exercise once or twice a day for ten or fifteen minutes, which would stretch out the short ligaments and shorten those which are getting long and filling out the body, a better state of health would be enjoyed. If the dentist would do this the condition would be obviated, even though he is obliged to work in very bad postures.

This was followed by a demonstration of exercises best adapted to overcome the evil influences of mal-position at the chair. It was conducted by Miss Alice G. Snyder, of Ann Arbor.

ORDER OF EXERCISES.

Poising.—1. Raise on balls of feet, stretch up with chest and head even with chin; 2. Same as No. 1, but at same time raise arms shoulder high at sides and stretch out; 3. Same as No. 1, but at same time raise arms front and up and stretch up.

Leg.—Take neck firm and keep in all; 1. Flex leg; 2. Flex thigh; 3. Extend right foot to right, pointing toe down, same with the left; 4. Extend right foot back, pointing toe down, same with the left; 5. Arms out, shoulder high, palms up; (a) extend right foot back, toe down; (b) raise knee front and up; (c) point toe back; (d) replace; 6. Neck firm, change diagonally forward to right, same with the left; 7. (a) Raise up toes; (b) bend knees; (c) straighten knees; (d) lower heels, keep trunk erect on hips; at same time (a) raise arms shoulder high at sides; (b) raise overhead; (c) lower to shoulder, and (d) replace at sides.

Head.—1. Bend backwards; 2. Force chin back; 3. Bend back, resisting with hands.

Arms.—1. (a) Raise arms sideways and above head until fingers touch; (b) bring hands down behind head; (c) raise arms to vertical; (d) bring back and down; 2. (a) Flex arms, fingers not touching chest but pointing back and out; (b) extend arms up diagonally, palms front, fingers and elbows straight, and at the same time bend head backward and look up; (c) bring head to position and arms to flex; (d) position; and, 3. Raise arms sideways, palms up, press back, with arms and head forward with chest.

Trunk.—1. Neck firm, bend forward; 2. Arms at shoulder high, palms up and bend forward; 3. Raise arms front and up, bend forward; 4. (a) Raise arms and shoulder high at sides; (b) bend forward; (c) raise arms above head; (d) lower to shoulder high; (e) raise trunk; (f) position.

Root Canals.*

RY F. J. SPRAGUE, D.D.S., CLEVELAND, O.

IT is evident that the dentist who aspires to permanently save a tooth, the pulps of which it is necessary to remove to be replaced with any of the means at hand must have a good knowledge of the anatomical structure of the typical root canals and the possibility of abnormality. He should be able to rightly diagnose secondary dentin, pulp nodules, tumors, and the like.

Upon the thoroughness with which operations in root canals are performed depends the usefulness of many teeth. Numberless chronic abscesses hang to the roots of pulpless teeth to-day which would not be there had the cases been intelligently treated and filled. As it is, just enough cement or other material, almost or quite impossible to remove, blocks the entrance to the abscess tract precluding the possibility of treatment through the tooth. The innocent victim of incompetency has the choice of having the tooth extracted, submitting to surgical treatment through the gum with progress doubtful, or allowing the tooth to remain to discharge this load of filth into the mouth at certain or rather uncertain periods, with the accompanying swelling, neuralgia, etc. How many times people say to us, "Every time I take cold my face swells over this or that tooth." The tooth becomes very sore and neuralgic pains emit therefrom. The root canals are filled, are they not? What is the cause? Our diagnosis is quickly and easily made, and we have our choice of the operations before mentioned with their attendant difficulties. If permanency in root canal operations is hoped for, every particle of the recently devitalized pulp or of the septic remains of a putrescent pulp, must be removed, every trace of bacteria eradicated. The canals made perfectly sweet, clean and dry and then thoroughly filled, the apical foramen being hermetically sealed; anything short of this places a doubt mark opposite the tooth. It is agreed that this thorough procedure is often very difficult in the molars and many times in the bicuspid. The six anterior teeth are looked upon as comparatively easy, but we must be on the lookout for difficulties even here. The central incisors supe-

* Read before the Cleveland Dental Society, March, 1898.

rior, usually have a single root with a straight canal of easy access, but we have nothing to guide us as to the length of the root. A large well developed crown may have a root abnormally short, making the use of the reamer dangerous unless guided by one aware of this possibility. With the superior laterals we are unable to determine the extent or direction of the crook we often have toward the end of the root. A short crowned cuspid may have a root of great length, crooks and curves are not uncommon, and we must always be on the lookout for the second root which is sometimes present.

Proper operations upon the canals of superior first bicuspid requires much knowledge of the possibilities of the roots of these teeth, good judgment as to the best way to treat them and a vigorous search for minute canals not visible to the eye or probe. We usually find a bifurcation of the canals here whether the root is single or bifurcated. This bifurcation is often connected by narrow passage. This should be enlarged or not as the judgment of the operator dictates. The root is liable to be very thin at this point and caution is necessary. These teeth may have two or even three roots. Second bicuspid superior are more constant in their anatomical structures having usually but one root. A bifurcation of the canal is often present however, the bifurcation usually extending a portion of the way, merging into a single canal at each extremity.

The molars present many difficulties in root canal work. The buccal roots of superior molars being often hard to locate and harder to cleanse and fill, crooks and turns, making the use of the reamer hazardous. Ottolengui calls attention to a first superior molar having few roots. In the lower incisors we have a broad flattened root with the walls adjacent to the canal very thin. Lateral incisors inferior have been found having two roots. Bodecker tells us of an inferior cuspid having three distinct roots.

Inferior bicuspid has usually but a single canal, but here we may meet with crooks and turns almost or quite impossible to overcome. Roots of extreme length are not unusual. When these long roots strongly imitate a corkscrew in shape, or are bent at right angles, as shown to us in Kirk's Operative Dentistry, their difficulties attending proper filling is apparent.

In lower molars the difficulties attending the treatment of

the anterior canal is often increased by finding it bifurcated. A bifurcation of the distal root is sometimes but rarely found. The roots of the third molars are nearly always erratic and I will not attempt to describe them, more than to say that we sometimes find a single canal where the roots are compressed forming a conical shape of the whole. I have here a section of a bicuspid showing an offshoot as it were of a branch from the main canal. I take it that this branch continues to the periphery. You will notice that it runs at right angles or nearly so, with the main canal. In treating such a case, this offshoot would probably be left unfilled. It would be puzzling to locate even though we were aware of its presence. Extensive deposits of secondary dentin, the pulp chamber and canal being nearly obliterated, is well shown in these specimens. This condition is probably brought about by external irritation, slow and long continued, pulp nodules, often being unattached to the canal walls, are often found in the dental pulp. We are often called upon to examine the teeth of patients affected with facial neuralgia to discover if the teeth are in any way the cause. It is well for us to consider that the pressing of this calcific deposit upon sensitive pulp tissue may be the source of the entire trouble. It is very often a long and sometimes impossible task to find any trace of a pulp canal where the deposit of secondary dentin is extensive. Several cases of abscessed teeth have presented to me where I was utterly unable to find anything to treat.

I infer from this brief description of root canals and the possibilities of abnormal condition, that we sometimes have to guess at it when we treat and fill the canals of certain teeth. We cannot always make a positive assertion that the canals are all thoroughly treated, thoroughly clean and perfectly filled. There is an uncertainty exists which we would be glad to remove. There is a liability that certain of these cases will return in the future with trouble in the apical space. It is necessary to get at this difficulty in order to give relief. We open into the tooth and if we find our progress barred by a pulp chamber and canal filling of cement, gold, amalgam, or other material equally difficult of removal from small tortuous canals, our heart fails us and we prepare for a siege. If, however, we discover that gutta-percha is the only obstacle in the way of salvation, we turn to our chloroform bottle, or the heated broach, and it is soon an obsta-

cle no longer. This is more easily accomplished if Dr. Ottolengui's method of saturated floss with chloro-percha dried and used as a cone to thrust into the chloro percha which has been placed in with the broach, an end of the silk floss is left projecting into the pulp chamber. Chloro-percha can be forced into the farthest point of minute tortuous canals if properly manipulated. If some of it is forced through the apical foramen no harm results. It is easy and sure in introduction, non-irritating, and hermetically seals the apical foramen. In case of future troubles it is easy to remove. Can the advocates of zinc chlorid claim as much?

Those of us who follow the practice of immediate root filling claim, I believe, that all that is necessary is to thoroughly clean and thoroughly fill the root canals. The trouble outside the tooth then taking care of itself. If this be so, the slight anti-septic action claimed to be exerted by zinc chlorid, is unnecessary.

Aseptic Precautions in Dentistry.*

BY OTTO ARNOLD, D.D.S., COLUMBUS, O.

DURING these last few years of the 19th century, the intelligent dentist need hardly be told of the importance of aseptic precautions in connection with his practice.

Within the last decade there has been so much said and written on this subject, that even he who runs, must have heard as well as read; and be it ever so little in amount, it has furnished much food for thought in this channel of science. Granted then you are all more or less familiar with the principles involved.

The term asepsis, in its most comprehensive sense, means cleanliness. He who is absolutely clean in every particular is to that extent in an aseptic state. But from the standpoint of a dentist or a surgeon, there is another form of cleanliness which we may more correctly designate as surgical cleanliness—the synonym of asepsis.

In our various operations in and about the mouth, mostly of a surgical nature, we are in duty bound to exercise every precaution for the welfare of our patients, by guarding against intro-

* Read before the Columbus Dental Society.

ducing into this territory any thing that may be a source of infection. When we consider the infinite variety of patients for whom we operate, using the same instruments, and when we also consider the numerous diseases which afflict mankind, and although present, many of them not visible, and the facility with which infectious germs can be transferred from mouth to mouth by the dentist's instruments, I say, when we consider all these things, it is time to act and forthwith adopt such methods as will most surely prevent evil to those who may fall into our hands.

While most of our instruments, except perhaps pluggers, may be germ transporting mediums, I regard the following as the most dangerous, viz: scalers, gum lancets, extracting forceps, impression cups, mouth mirrors, carborundum and other stones, and hypodermic needles.

Think for a moment how easy it would be to carry into the mouth pyogenic germs through the medium of impression trays. We cannot always know what condition of ill health a person may be in, neither is it always prudent to question too closely—neither can a syphilitic chancroid always be detected when present. Isn't it then best to practice safe methods and take no chances?

The sterilization of dental instruments is an old theme; and I bring it again to your notice only because I believe we have now better facilities for accomplishing this much desired state. Heretofore most processes have been impracticable or at any rate inconvenient for the busy dentist, and therefore we have, I think, particular grounds for congratulation in having a simple, safe and ready agent for this work. For some time past I have been using for this class of work, Formalin. This is a saturated solution of formaldehyde in water, in strength 40 per cent. Formalin mixes with water in all proportions, it is, therefore, easy to prepare any dilution that is desired. A 1 per cent. solution meets all the requirements of asepsis, viz: for washing the hands and instruments. In this strength it is not irritable to the tissues and acts as an effectual germicide and sterilizer. Formalin in any strength does not injure steel instruments or corrode tooth structure, therefore for dental purposes it proves an important agent. In short, if instruments, impression trays, mouth mirrors, etc., after use are immersed for a short time in a 1 to 2 per cent. solution, you are guaranteeing your patients immunity from infection through the use of unclean instruments and appliances.

Furthermore: Formalin is useful in many other ways in dental practice. For deodorizing and sterilizing putrid pulp canals I do not know of its equal, it does the work so promptly. Neither is it done by substituting one odor for another, as formalin is practically free from odor. The process is really a chemical combination free from violent reactions.

For use in putrid conditions of the tooth canals, where there is no abnormal outlet at the apex, I use formalin in full strength, taking pains to avoid contact with the soft tissues. For irrigating sinuses I would recommend the employment of a 3 to 10 per cent. solution, according to requirements. In all abnormal conditions of the oral mucous membrane calling for anti-bacterial treatment, including pyorrhea, its use in 1 per cent. to possibly $2\frac{1}{2}$ per cent. as a mouth wash will result beneficially.

It is highly commended as a preserving agent of organic tissues, and is now extensively used for that purpose by histologists. In this connection formalin (in concentrated form) may prove a valuable agent for sterilizing those portions of tooth pulps that cannot be entirely removed from their canals, and which must of necessity remain, and which so often are the sources of incurable alveolar lesions unless extraction is resorted to. Who knows but that we have here that much sought for medium that will transform a devitalized remnant of tooth pulp into an inert and harmless substance.

Formalin promises much in the field of general bacteriology. In fact, it is now well known as an ideal antiseptic, deodorant and germicide, and for the multiplicity of uses that may arise in a dental practice, I commend it to your careful consideration.

Resume of Recent Treatment.*

BY A. G. REINHARDT, D.D.S., PITTSBURGH, PA.

IN searching for a subject to present to the society at the present meeting, I felt that almost every one of interest has been so carefully presented and thoroughly discussed, as to make it rather difficult to find anything new to write, so I concluded to under-

* Read before the Odontological Society of West Pennsylvania, at Sharon, Pa., June 9, 1898.

take a sort of a retrospective view of the various forms of treatment which have recently come into vogue, in comparison with methods employed a few years ago, interspersed with some practical experiences which I have had in their employment recently. When we look back into the past few years, and compare the methods and materials applied to various cases at that time, we cannot but notice and appreciate the immense advantages gained by their introduction, both to ourselves and our patients. I shall confine my remarks more particularly to cataphoretic work, both in living cavities and nerve canals, the use of Kalium-natrium, and the introduction of Dr. Trey's gold. The final introduction of the perfected or nearly perfected cataphoretic outfit is, in my opinion, one of the distinctive features of this dental age. That greatest of all bugbears, sensitive dentine, has at last been overcome; if not entirely so, so very nearly that we can almost regard it as specific. There are some instances in which cataphoric treatment cannot be applied for idiosyncratic reasons, or perhaps the location of the cavity is obscure and difficult of access. My main objection to the apparatus is the necessity of holding the point in position. This is exceedingly tiresome and sometimes objectionable to the patient, as the slightest movement produces shock, especially if any quantity of current is being given. I have never seen any mechanical contrivance for holding the point, that could be universally applied and which could be obtained at moderate cost. I have used the current for sensitive dentine, pulp devitalization, and in root canals, in conjunction with nitrate of silver. In working on sensitive dentine I have found that there is no particular manner of procedure that will do in all cases, but that each is more or less a law unto itself and must be handled accordingly. Especially is it so with ladies and persons of extreme nervous temperament. In proceeding to apply to such cases, everything should be done quietly, avoiding the bringing to the sight of the patient too much of the apparatus before ready to begin, as the electrocution idea is generally uppermost in their minds when you speak of electricity, and you will in many instances find the heart acting like a trip-hammer, and your patient so excited that half the chance of success is gone. Confidence is half the battle, patience the other half.

Regarding solutions, I have used guia-cocain and 50% cocain solution, and have had best results with latter in conjunction with

crystals placed directly upon the cotton. Regarding the time required, I have had complete anesthesia in from three minutes to one hour.

In the application of the current my usual procedure is to get everything ready, place point in position, and if the patient has been particularly nervous and apprehensive, wait about three minutes before turning on current; during this time they will imagine the current is passing through the tooth, and not having any pain will become more confident and you will experience very little trouble. In devitalizing pulps, the real value or cataphoresis demonstrates itself. While it takes from thirty to ninety minutes to devitalize perhaps a molar, I think all will recognize the immense advantage this method has over arsenical treatment with its attendant discomfort and possible destructiveness to surrounding tissues; and the immense saving of time and thoroughness with which the work can be done are also distinct advantages. It is very important to isolate the tooth to be treated by means of the dam, as when current is diffused among surrounding structures its power is diminished and the effect less satisfactory. In using clamp and ligatures extreme care should be taken to render the dam resistance tight, as should the cocain be conveyed to the gum structure, destruction of it and the underlying structure will result in case of leakage. I have had one such unfortunate experience and the result has been a lesson to me in being particular about a water-tight dam. The case was one in which the cavity extended nearly to gum margin, in a peculiar shaped lateral, which made the dam slip slightly and as a result about a quarter of an inch of gum tissue and bone was destroyed. Cases where access is difficult and the cavity near gum margin, such as posterior approximal, and buccal cavities, I have been in the habit of filling partly with gutta-percha or cement, leaving as much of the floor of the cavity exposed, then applying dam and proceeding as usual. Generally speaking, I have been very successful in the use of the cataphoretic outfit and in a majority of cases results have been all that could have been desired. The time required to produce effect has been raised by many as a serious objection from a financial standpoint, but I believe, and it has been my experience, that mostly all patients who have derived the benefits of painless excavating of dentine cavities and removal of pulps, are more than willing to pay for the extra

time, if the matter is properly explained to them. While it is exceedingly tedious to stand and slowly apply the current to a hypersensitive tooth, I believe more time is gained in the end, and the patient and operator are in better condition physically than if an attempt is made to excavate without cataphoresis. I, for one, would certainly prefer to spend an hour obtunding than try to excavate, with a fretting patient interfering with the proper conduct of the work. In canal work and bleaching my experience has been limited. I have recently been using in some cases, in molars, a forty per cent. solution of nitrate of silver in connection with the current, and am watching with interest for results. The nitrate, it is claimed, is superficial in its action, hence the uncertainty of results; but I believe, used with the current, it can be made to permeate the tubular structure thoroughly. If this can be done, we will have the ideal canal treatment, at least for the back teeth. In comparing the advantages we enjoy in the use of these recent discoveries in therapeutic and mechanical treatment, we can feel a certain satisfaction in the substantial advance in the direction of more thorough and painless work. In connection with this work the rapid and painless introduction of fillings with Dr. Trey's gold, carefully worked, gives an operation which cannot but give the greatest satisfaction to both operator and patient. It has been urged that methods and materials, allowing of more ease in their use, have a tendency to promote carelessness and slipshod work, but it has always been my experience that no matter what the material, either gold, amalgam, cement, or gutta-percha in any form, unless carefully inserted the result will be unsatisfactory. One of the greatest benefits of the recent innovations over former methods is the possibility of doing away with the popular impression that the dental chair is a place of torture and execution, and that it is no longer necessary, in the majority of cases, to suffer to any great extent to have work done. The fear of pain in the average mortal is universal, and when once we can convince the public that we have the means at hand to eliminate these undesirable features, the benefits to us in a pecuniary way, and to our patients from a standpoint of health will be a source of immense satisfaction.

**Proceedings of Tri-State Dental Meeting, Held at Put-in-Bay,
June 21, 22 and 23, 1898.**

(Continued from page 383.)

DR. ELIZA M. MOSHER was next on the program and delivered a lecture on the subject—The Dentist's Position at the Operating Chair. (For report of lecture see page 417). The discussion of the subject was opened by Dr. W. H. Whitslar, Cleveland, O. He said: I feel that the paper we have just heard has well repaid us for coming here. This is of great importance and probably more so than how to put in an amalgam filling, or filling root canals. The subject has been so well written and discussed that I feel myself unable to add much to it. I will add only a few words in reference to the mechanism of the body, and that is about the spinal column and the head. Different than the lower animals the head of the human being is supported in the center by the spinal column. In the lower animals the head is supported at the back. Animals which walk upon all fours and whose heads are supported at the back are supported also by the ligamentum nuchæ at the back. Their head is not so large comparatively and is also supported by more muscles. The back or spinal column is different in man than in lower animals. When the spinal column was before us we saw it was not in a straight line, but had four curves, and these are all for the special purpose given to us by the Lord to help support the thorax and organs with the same. This, with the aid of the muscles of the back, keeps the body in an upright position, and all these have to do with the maintenance of a good, healthy body. The value of any human being depends, of course, upon all functions of the body being in a perfect condition. Adding to this the great number of nerves, we have an idea of the mechanism of our bodies. We also have a loss of nerve tone and that is what we are, as dentists, falling into.

The question is, is the dentist's occupation a healthful profession? Take a pitcher that is so constructed that it may be utilized to carry water or material in for a number of years if it is only filled to a certain point, when filled beyond that it breaks and is no longer useful. The same way with our own bodies in

the practice of the profession. There is a limit to the endurance; the body is not built to withstand the great muscular strain which a man is exposed to in dentistry. There is many a man who can perform great tasks well, but whenever they go beyond that they become physical wrecks. The dentist who is capable in all operations is one who has his body in a healthful condition and whose nerve tone and digestion are correct. How are we to overcome the idiosyncrasies which come to us as workers in this line? We have had exercises presented to us this afternoon which are of great importance. If you are an observer, and I have tried to observe at this meeting the older men of the profession, particularly those who have used the old Archer chairs, they are the persons who have had to suffer from the ill effects of stooping over, whilst the younger men keep their shoulders level and remain fairly straight. To illustrate this point, I wish to speak one word. All modern chairs can be raised up or down, and we must use same so as to accommodate ourselves as a matter of health and protection. If we raise the back of chair and head-rest we put the patient's head in the normal position or a little more forward, and this we do sometimes while operating upon the lower teeth; but if you desire to operate upon the upper teeth, in order to bring the head back and throw patient into position for easy access, you must lower head-rest and thus throw the head back. We also have as a valuable adjunct the Watkins head rest, which enables us to throw the head to one side or the other. Whilst we are operating upon the lower teeth, especially into canals, we can gain a straight view by looking through the corner of mouth. We must take into consideration the line of axis of tooth. Now, the longitudinal axis of the molar teeth is in a line with the lower border of bone extending up to the opposite side of mouth, and if the operator, in working upon the left, stand on the right he would be in a direct line with the tooth, and if he would operate on the right side he would stand on the left. We also have the use of the mouth mirror and also stool. This latter, whilst I have never used it, I have observed by this demonstration this afternoon that the stool is a very healthful thing for us. A man stands on two legs, an animal upon four. The animal stands upon the toes. Man stands upon the foot, he is supported by only about one-half, but this is counterbalanced by ball of foot and toes. In instep is the mark of perfection of the human race. In London,

in years gone by, when policemen were brought up for inspection their insteps were observed, and if they had a low one they were refused, because it was said a man with a low instep could not walk as long as a man with a high one.

As a matter of especial interest I want to say this: Of the four billions of people upon the earth about one-fourth die under the age of six years and about one-half under the age of sixteen years. These figures are stupendous, but we who are in this work try to keep well and live to a good old age. To illustrate, I examined a number of back copies of *Cosmos*, over seven years, and picked out, at random, thirty-five deaths during this time and found that of these thirty-five dentists who had died, the average length of life was sixty-two years. That gives us a little satisfaction in knowing that while our profession is a little unhealthy, we live longer than do physicians and many other classes of people.

As to exercises I agree to say only a word. Those which we have had to-day are certainly very excellent. Prof. Anderson, of Yale, also gives many such exercises for us. He recommends the head resistance as a very excellent thing. The only disagreement I have with this class of exercise is, that it is too tame for any of us. We should get out with our bicycles. We have to learn what kind of exercise is most beneficial to us. Bicycle riding takes us out into the air.

One of the most beneficial exercises in which we can engage is that of fencing. This is the most excellent one for the dentist; as the body is not only supported upon a pedestal at hips, but also upon both legs, and he is able to carry himself in any direction, either forward or backward. I certainly want to thank Dr. Mosher for giving us such an excellent paper.

DR. J. TAFT, Cincinnati: The matter of position in its relation to and influence upon the muscles of some parts of the body at least is so apparent that hardly anything specially need be said upon this point. It should be borne in mind that interference is made by false position, indulged in so frequently by the dentist upon the various organs and parts of the body. Pressure upon the digestive viscera necessarily interferes with their work. If the chest is contracted pressure is made upon the lungs and their work imperfectly performed, and respiration is defective. In the case of the dentist this is a very common fault.

By false position the lung cavity is much lessened and the organs not only impaired and injured permanently by this defect becoming a habit. In many instances this undue pressure is continued for a number of hours each day. Some operators stand at the chair from eight to ten hours a day, and much of that time in a wrong posture. Not only the lungs and respiration suffer in this way, but the heart as well, its proper function should be as perfectly maintained as possible.

The viscera of the abdominal cavity undoubtedly suffers in the same way, but possibly not to the same extent. The liver may also be injured by defective surroundings. In the last twenty-five years some improvement has been made in regard to the special posture of the dentist. The modes of procedure in dental work have so changed as to be decidedly to the advantage of the dentist. Perhaps the dental engine has brought about a more radical change in this respect than any other instrument or appliance; however, the mallet and the rubber dam have each accomplished much in this respect. Chairs have been greatly improved, so that it is now practicable to bring the patient into a position much more favorable for the operator than in former times.

But with all these there is much of faulty position indulged by the majority of operators, but may we not hope that with all improved appliances and awakened consideration of the subject, a great change for the better will in the near future be brought about?

A quarter of a century ago or more many of the best dentists in the country, those having large practice, involving great labor, broke down, and in a large degree, at least, on account of the conditions that have been referred to in this paper. There were many cases in which men's health and strength gave way, the condition resulting fatally; many others there where whose health was so impaired that, though they lived for many years, they were very much enfeebled and unable to practice as they once did.

The injury resulting in the way referred to not only pertains to the organs themselves, as for example the lungs, heart and digestive organs, but all parts of the body suffer because of failure of these vital organs. Nutrition impaired, all the body suffers, and the body, as a whole, necessarily suffers from imperfect elimination. Any interference with the action of the heart involves

every organ and tissue of the body. The nervous system and brain have their full share of injury under such circumstances. Younger members of the profession who have entered it in recent years do not realize the embarrassment that was experienced by those who have gone before.

If this subject receives at the hands of the profession the consideration it justly deserves there will be a rapid and great improvement in the near future.

This subject should be discussed in our societies, schools and journals in such a way as to call attention generally to it.

DR. GEORGE E. HUNT, Indianapolis: The suggestions of Dr. Mosher have presented themselves to all of us quite frequently in our lives while practicing. We may not have given the subject as much thought and reflection as Dr. Mosher, and consequently have not anticipated the bad results which may take place. We all have a warning before it occurs, we get tired and nervous. For this tired feeling I would like to offer three suggestions which I have practiced for a number of years. When I feel tired in my chest and had been in a cramped position, I take a wind instrument, the *bazoo*, for instance; you can get the clarinet or brass instrument. In playing it I have to extend my lungs to their full extent and allow a very small amount of air to leave the lungs at a time. Within ten minutes after practicing thus I have had relief, so you see I have found a very easy way of correcting that tired feeling and breaking deformity. Dr. Anderson says that rapid breathing will also relieve it.

Another thing—getting tired in the neck. I cure this, or at least obtain relief from it. For a great many years I have slept in bed without a pillow. It forces my head back, it relieves my bad feeling in the neck and I don't get stoop-shouldered.

Another thing is to relieve the muscles of the arm and chest. While I rest in bed I like to put one arm under my head and change about. These are a few simple means which I employ and they have been very beneficial to me, and will perhaps prevent spinal curvature, weak lungs, etc. I offer these suggestions for all.

DR. CLAYTON, of Indiana: There has been much said here about the posture of the body at the chair. I defy anybody to stand straight with the heels which are made on the fashionable shoes of to-day. Although the exercises we have seen to-day are

very good, yet they are too mild. If every dentist here spends one dollar for the U. S. Tactics and follows out instructions as therein given he will develop into as good a man as is found in the army, which the foreign armies and nations say is the most elegant army in the world. I have had some experience in the army, and would be there to-day if not too old, but if I could get there to-day I would.

If you will take these exercises, known as Tactics of American Volunteers, they will do as much good as those seen to-day, only they are much more violent. There is one very excellent one for strengthening the muscles of back and shoulders—throw arms out and then back; also spinal motion.

Bicycles have also been mentioned as a means of exercise. It is all right if properly done, but I do not believe in these so-called *scorchers*. Man cannot ride on all fours and be healthful. I want to see a man stand or sit upright, as God intended he should. If the scorcher wants to ride let him go, and the sooner he scorches himself out of existence the better.

DR. MOSHER, closing remarks: I am very much obliged to you for all points you have given me. As I got up to speak to this audience of fine looking men I said to myself, "I am afraid I am in the wrong place." Then I remembered those students at Ann Arbor, whom I had been watching, and over whom I had been groaning. My plea is for the men who are coming into the profession that they shall be trained correctly in this direction.

One word about exercises: Perhaps you did not observe that most of the exercises are corrective exercises. While the violent exercises are all right, it starts the blood, yet the exercises or posture which has produced these changes has been a very gentle, steady, even exercise with the mallet or something else (I do not know the instruments), they influence all the muscles to go wrong, and as gentle exercises are quite as sufficient to correct them, it is not necessary to take these hard, violent exercises. I would not approve anybody ever taking such vigorous work after standing at chair so long a time. We must take easy and slow exercises. I must still say that I believe the best exercises for overcoming the harm which is done is to give the same sort of work for exercise which is the opposite of the one used. The bicycle, ridden correctly, is an exceedingly good thing, but on the other hand it tends to hang the head just as the dentist's work tends to

carry it forward. In passing into the operating room in Ann Arbor I looked down the line of chairs and I could not see a head. I said, "Where are the heads?" Immediately every head popped up. I claim that this should be overcome. We should do work just to strengthen the muscles which have been overtaken.

DR. TAFT: Mr. President, I move a vote of thanks be extended to Dr. Mosher and Miss Snyder for their kindness in presenting this subject to us.

The motion was seconded and unanimously carried.

First session of meeting adjourned at 6:10 p. m.

(To be continued.)

A Monthly Summary from Our Foreign Exchanges.

Translated expressly for the OHIO DENTAL JOURNAL.

By H. PRINZ, D.D.S.

The Therapeutical Value of Vasogen and its Combinations in Dentistry.—Vasogens are liquid hydrocarbons in which the oxygen atoms are artificially increased. (Said to be under high pressure oxygenated paraffins.—ED.) They possess the power of dissolving iodine, iodoform, etc., and are rapidly absorbed by the tissues of the body. A 10% solution of iodo-vasogen is the usual strength employed and by its affinity for moisture and secretions, it is almost instantly absorbed. The penetrating power is much higher than alcoholic solutions of iodine, not having the irritating properties of the latter. Iodoform-vasogen has been employed with good success in root-filling, and as a pulp-capping material in combination with oxide of zinc. As this iodoform is in solution, it will act promptly in destroying waste products of micro-organisms, viz: ptomaines. The odor seems to be much modified in this form. The easy mode of application, the high penetrating power, the increased healing property of this drug in such solutions will secure the vasogen-preparations a permanent place in dental surgery.—*Fritz Zins Odontol-Blätter*.

Chlorid of Ethyl as a General Anesthetic.—Brodbeck used a mixture of chlorid of ethyl and chlorid of methyl with little success. Lately he noticed by local application a general anesthetic.

tic effect which also as been mentioned by Billeter, Carlson and Thiesing. Respinger and Ruegg (Bale) constructed a special apparatus for inhalations. B. used it in 48 cases as general anesthetic (exclusively in women and children) and speaks very enthusiastic about the good results obtained.—*Vierteljahrschrift für Zahnheilkunde*.

Dr. Haskell of Chicago, Ill., has been called to Sweden this summer to demonstrate his methods of prosthetic dentistry. On his way there he accepted an invitation by the German dentists to give a similar course in Berlin.—*Journal für Zahnheilkunde*.

Treatment of Facial Neuralgia.—Farradic applications of electricity on indifferent places. Times: about 5 minutes with successive increase of strength. In early cases salicylate of soda and bromide of soda, each 15 grains, 2 or 3 times daily. Acetanilid, morphine, chloral and extracts of cannabis indica were used successfully, more so the latter two drugs in combination. A mild saline laxative is indicated in all cases.—*Dr. Hirschhorn, Vienna*.

Care of the Teeth and the Mouth in Children of the Public Schools.—Drs. Voerkel and Weber examined the mouth and teeth of 5,003 children and found that 95% of the children had decayed teeth. They conclude their report by:

1. The structure of the teeth will be materially influenced by the use of water, which is poor in lime salts. Therefore the teeth will yield more easy to the attacks of caries.

2. If the inorganic materials are sufficient in quantity and there is still a large percentage of caries, the reasons must be sought for in the food-stuffs. Through Miller's classic researches we know that a mixture of bread and potatoes, with saliva, forms acids which will corrode the teeth the same as sugar and saliva does. The partaking of soft wheat bread is specially adapted to promote the cause of caries, also too freely indulging of sweets, viz: candies and chocolates. Rye-bread is to be recommended; the force of mastication is increased which in turn creates a better circulation and stimulates a larger deposition of lime-salts and a firmer calcification.—*Journal für Zahnheilkunde*.

Asphyxia Resulting from Taking an Impression.—A man, 36 years, healthy condition, applied at the clinic for some dental work. An impression was to be taken with compound. But the

tray and material had hardly been introduced in the mouth, when the patient's head dropped forward, the jaws closed spasmodically, the pupils enlarged, the respiration stopped for a few moments, while the pulse, just a little weaker, did not cease. A mouth-dilator was used and the bray quickly removed. The patient was placed on the floor, 2 cc. of a 5% camphor-ether solution were injected and with the aid of artificial respiration, coldwater applications, and about 20 minutes hard work, a normal condition was again established. The patient did not smoke nor use alcoholic liquids, auscultation pronounced him healthy. Asphyxia was probably the result of reflectory stimulation of the trigemini and vagi nerves which is analagous to the reflectory cessation of respiration in the beginning of chloroform narcosis by inhaling too concentrated vapors.—*Drs. Respinger & Ruegg, Bale.*

COMPILATIONS.

The Ideal Lower Denture in Difficult Cases.*

BY J. D. PATTERSON, D.D.S., KANSAS CITY, MO.

It is oftencrudely estimated that when the various operations in dentistry are performed faultlessly their success is assured. While this may be largely true and a good rule to work by, it is not entirely correct, and this is especially so in regard to obtaining a satisfactory result while fitting lower plates to the edentulous jaw.

In the work of plate-making there are certain broad principles to be observed in all cases. First, the plate must rest with even pressure upon the mucous membrane it covers, and if such surfaces present areas of soft and hard resistance, then the plate in relation to those tissues must exert a compensating pressure. The soft tissue must give until an even plane of resistance is established, without which the plate will not adhere, will rock and will unduly press and irritate at points. I will not describe here the various methods of securing success in this cardinal principle, but merely mention it.

* Read before the Missouri State Dental Association, July 5-8, 1898.

The second important feature is that of properly placing the teeth to secure natural and anatomical articulation. These two broad principles observed, as well as many other minor and less difficult problems solved, we may expect the best results in a large majority of cases.

To this statement there are exceptions, and it is one of these classes of difficult cases I now direct your attention—the edentulous lower jaw, where the once prominent ridge has been resorbed through disease, through natural senile recession, through absence of plates, or by the wearing of ill-fitting or non-aseptic plates. Here we are confronted with a situation in which, although we observe all basal principles in plate construction and every minor point usually taught, we find the denture so unstable and easily movable that it is anything but a pride to the operator or a comfort to the wearer.

A variety of contrivances to obviate this difficulty, spiral springs, and a variety of suction chambers or channels, patented and unpatented, have been devised to meet the demand and delude the hopeful, as they certainly have the writer in past years. The springs, in my opinion, are hardly worth considering; they are ineffective and also intolerable because of the continual pressure and difficulty in cleansing. The numerous little suction points or deeper channels are sure to produce irritation at last, accompanied by greater absorption. On account of such irritation they are usually inapplicable because of the surface on which the plate must rest being so narrow, on account of the encroachment of muscular tissue, that they cannot be placed.

A solution of the difficulty in these cases is to supply, as well as a perfectly fitting plate, a heavy one, and the object of this paper is to recommend to you the very heaviest material made for that purpose, namely, Watts' "Metal." The use of heavy plates to utilize the force of gravity in the retention of lower dentures is nothing new, but in practice—save by employing weighted rubber—it is very little used. In conversation with the managers of dental depots I find that a fusible alloy is used in probably less than 1 per cent. of cases where my experience proves it to be indicated.

The chief objection which is urged against the use of this material is that the muscles of the lower jaw soon tire of the superimposed weight. This, however, has not been my experi-

ence. To settle the question for myself I found in a patient an opportunity to test this matter and proceeded to experiment, with the result that in no case did I find the weight an objection, if the plate did not weigh over fifty dwt. The ordinary plate made of Watts' metal weighs about thirty-four dwt.; the same of Weston's metal weighs twenty six dwt.; of weighted rubber, twenty dwt.; and of ordinary rubber, ten dwt. I found that the additional weight of Watts' metal gave a decided advantage in the retention of the plate, and the experiments all went to show that a plate weighing between 35 and 40 dwt. never tires the jaw, and affords a comfort and satisfaction not attained by materials of less weight in difficult cases.

Another objection to the fusible plate is that the metal will not retain its color and will produce a disagreeable taste: These features I have found in fusible alloy made by the dentist himself, but have not observed them in Watts' metal (the formula is not known precisely, but is principally of tin, lead and bismuth, as are all alloys of this class). In the dentures I have made of Watts' metal there has been no oxidation after fifteen years' use, and other dentists have confirmed this.

The most frequent objection is the difficulty in obtaining a good result, the claim being made that the metal will not flow in every point of the mould. I have gone through this experience, but now find no difficulty in securing a perfect cast from the mould.* I use for model and investment the usual plaster, sand and asbestos of soldering investment, with the addition of a small amount of whiting to render the surface smooth, following the directions accompanying the metal, with the addition of pure beeswax as a flux. Before I used the beeswax as a flux failures were common, and I therefore give you this plan, which has not been before recommended, and am confident that it will insure good results. The flux must not be used indiscriminately or unevenly, but as follows: After carefully removing every particle of base-plate, heat the case and apply pure melted beeswax with a hot pencil brush wherever there is doubt of the alloy following; just a smear of the wax will do the work, too much of a coating will result in failure.

When this is done and the case is clamped, joints luted, heated and dried until moisture will not condense on a mirror held before the pouring gates, the case is ready for pouring. Do

not pour while the flask is very hot, but allow it to partially cool; do not overheat the metal, but pour rapidly just so soon as thoroughly melted.

I shall be pleased to give any practical instruction to those who have had difficulty in doing this work, and I can cordially recommend this style of denture because it is strong, stays in place, does not tarnish, is easily constructed, and reasonable in cost.

I quite agree that reinforced gold plates with rubber attachment will give the necessary weight, and a more acceptable and handsomer result is obtained; but the great majority of patients wearing full lower dentures are unable to pay the fees necessary for gold.

DISCUSSION.

DR. W. M. BARTLETT: This is a very good class of work in cases with flat ridges, but it is always liable to have bubbles. I cannot approve of any work not easily repaired, and this cannot be; the only way we can repair it is by the use of easy flowing solders or by a vulcanized joint, and all such work tarnishes. I much prefer a gold base or a continuous-gum plate in cases of this kind, and the work can be done with both.

DR. J. H. KENNEDY: During the last few years I have made many of these plates and they give entire satisfaction. If care is taken in polishing the plate in the first place it may be worn for years without tarnishing.

DR. WM. CONRAD: Make the repairs on these plates with rubber, and it is just as easy to do as with rubber plates. The only objection which I have to the use of any heavy plate is that there seems to be an enormous amount of resorption of bone process and considerable softening of the tissues themselves.

DR. H. PRINZ: Some time ago I made a number of analyses of the various metals that are used for lower plates, with the following results: Watts' and Weston's metals are alloys largely composed of tin and silver, to which a small amount of bismuth is added to reduce the melting point. The saline fluids in the mouth when acting on the plates may form chlorid of tin, as tin is very easily attacked by chlorin. This chlorid of tin is a strong antiseptic agent, which will exert its good influence upon the mucous linings of the oral cavity. No toxic salts are formed for

this reason, and because of its weight and adaptation a cast plate is preferable for lower dentures. Furthermore, it is easily kept clean by the patient. Broken plates are repaired by using the same metal as solder with the soldering-iron and employing a solution of chlorid of zinc as a flux. For strengthening partial lower dentures a piece of german-silver or tinnners' steel wire should be used. Have the cast as dry as possible and nearly the same temperature as the molten metal.

DR. PATTERSON, closing the discussion: I know that this method has been discarded, but I think unwisely, as it has great possibilities in these particular cases. Some require weight to hold the plate in place so that the patient can properly masticate food. These plates can be easily repaired with a blow-pipe and a flux of beeswax; the latter article should be pure and have no paraffin in it. Tissues do very well under these plates, and in many cases the absorption has extended to the bone proper before plate is put in.—*Dental Digest*.

ALL SORTS.

Bleaching a Badly Discolored Tooth.

About three months ago a gentleman came to me to have a tooth bleached, and the pulp had been dead for thirty-one years. It was a central incisor. It had a soft gold filling in it; it was pretty close to the pulp chamber, and the tooth was almost black. In addition to the blackness from the inside, he had been an habitual chewer of tobacco and smoker of pipes, so that not only the end of the tooth but all other teeth touched by the pipe or tobacco were equally black. I drilled into the tooth and after washing out the cavity and filling the root, I concluded I would try the experiment of Dr. Keefe, namely to bleach it with a twenty-five per cent pyrozone and sealing it in the cavity, as nearly as I could. So every day I put in a twenty-five per cent solution of pyrozone, having adjusted the rubber-dam in each case, so that nothing could get in from the outside. At the end of twelve days I had the tooth completely bleached, so that it was whiter than its next-door neighbor. I then dried the interior of the cavity completely, filled about two-thirds of it with oxychloride of zinc, covered it with oxyphosphate of zinc, allowed it to harden, and varnished that with gum dammar and sent the patient

away for a week. On his return I put in a gold filling, covered the exposed dentine everywhere, saw the gentleman yesterday, and the color of the tooth was just as good as it was when I completed the operation.—
A. W. HARLAN in *Dental Review*.

A New Process of Fusing Platinum.

Dr. L. E. Custer, in a paper read before the Illinois State Dental Society and published in the *Dental Review*, referred to his former method of melting platinum scrap by means of an arc light carbon, placing the platinum on a carbon block. This method, he says, gives the platinum a stiffness not possessed by new platinum. Then continuing he says:

When it is desired to melt the platinum and at the same time retain its ductility, another method must be employed. It is this that is new.

The electric arc is still employed in a manner precisely the same as for hard platinum, but instead of using carbon terminals I now employ a block of lime for resting the platinum upon which forms one terminal and a platinum pointed metal pencil for the other terminal.

The block of lime is merely a receptacle for placing the platinum scrap upon. It will withstand the heat of the arc when used in this manner and does not affect the platinum. The electrical connections are different from those where carbon is employed. Lime is not a conductor of electricity, so instead of attaching one wire to the lime as to the carbon, electrical connection is made by having one of the electrodes terminate in a short piece of heavy platinum wire, which rests upon the block of lime, and upon which the platinum scraps are heaped.

The other terminal and the one which is used in the hand is a rod of brass half an inch or so in diameter and four inches long mounted in a wooden handle. The rod is tipped with a solid nugget of platinum the size of a thimble.

The object in having such a large piece of metal is that it conducts heat off from the platinum tip to that extent that the tip does not melt and unite with the scrap.

It will be noticed that by the above arrangement the platinum scrap comes only in contact with the platinum tip and the block of lime while fusing. It cannot become contaminated by the tip, as that also is platinum, and since the lime is not decomposed by the heat the metal is not affected by its presence. Platinum fused in this manner is as soft and ductile as new platinum and may be rolled or drawn into a wire as easily as new.

Every dentist who has the Edison, or 110 volt current can fuse his

own scrap in this way. All that is necessary in addition to the block of lime and platinum tipped pencil is a resistance equal to about 10 or 15 ohms. Five pounds of No. 19 copper wire wound on slate (school slates) and properly mounted so as to ventilate will give this. Or, an electric oven will answer just as well if disconnected from the rheostat.

In order to get the best results it is important to make the connections proper as to the poles. It is found that the positive pole of an arc is much better than the negative, consequently the scrap platinum should be the positive and the pencil the negative pole. If the pencil should be positive, unless it is a very large piece of metal, it would melt before the scrap, whereas, if the scrap be made the positive pole it melts before the pencil has even become warm.

While not more than half an ounce can be melted at once with the above described resistance, there is no limit to amount of platinum that can be gotten together in one mass with a larger arc by a process of fusing too. It is not necessary to have the whole mass in a fluid state at once, a part may be melted and new metal added.

Refining Gold Scraps.

Dissolve the gold scraps in as small a quantity of nitro-muriatic acid as possible—warming hastens the solution—dilute the gold solution with three times its volume of water, nearly neutralize the acidity by adding small quantities of sodium carbonate. If the acidity is completely neutralized, the gold will be precipitated; in that case redissolve by adding a few drops more of nitro-muriatic acid. Filter the solution, carefully washing it through with water, then add slowly, while stirring, a concentrated solution of ferrous sulphate, previously acidulated with small quantity of sulphuric acid. Set the solution aside for twenty-four hours for the complete precipitation of the gold, then decant the superabundant liquor through filter paper so as to catch any floating particles of gold; wash the precipitate out of the vessel, pouring it through the filter paper; roll the paper up and fuse with flux.—F. P. CATCHING in *Dental Weekly*.

Why Coagulants Diffuse Through Dentine.

In a paper read before the Illinois Society and published in the *Dental Review*, Dr. E. Lawley York said:

“After the death of a pulp it is invaded by various bacteria, strictly saprogenic as well as pathogenic, the result of which is that the pulp becomes a foul, semifluid mass. This putrefactive decomposition of

albuminous matter is effected by a great variety of micro-organisms and gives rise to a great variety of products, some of which are volatile and are characterized by their offensive odors. This putrescence was the result of first the splitting up of the albumins into peptones. Now these peptones are not coagulable; for example, if you take pepsin and add it to serum albumin and allow it to digest at body temperature, you will find it is converted into peptones, etc., which are not coagulable. This is precisely the same condition that we find produced by the action of peptonizing bacteria upon proteid matter. (Here exhibit tubes of decomposed serum albumin to which has been added pepsin.) On the addition of carbolic acid, they do not coagulate.

Now, how does carbolic acid act upon these substances? Does it coagulate the orificial ends of the dentinal tubuli, and seal in all this poisonous matter? Most emphatically, no. The carbolic acid will penetrate as well as anything else you may use."

A New Combination for Filling Root-Canals.

Dr. W. L. Roberts gives his method of filling roots, in the *Items*. The material he uses is made as follows: Salol, in any quantity, is to be placed in an iron pot, and double quantity in bulk of balsamo-del-desarto is added, and the two slowly melted over a flame, and mixed; then, while warm, turn the mass out upon a slab or plate and knead in resin with a stiff spatula, until when cool it forms a crystalline mass that will break with a snap. You will find it quite a knack to get just the right consistency so it will not be sticky and hard to work, but when once prepared a small jar full will last a long time.

The method employed for its introduction into root canals, I will briefly state. Rubber dam applied and canals properly prepared. You will observe that I have here an ordinary Evans canal dryer. I remove the point which comes with it and substitute therefor a copper point. These points I file down from wire, making them of several sizes, so that I may be able to go into any sized canal. I have them no larger than a hair. I prefer copper, because it is easy to work, very pliable and fairly tough. It will safely enter crooks and turns of almost any canal and not break. It is also a good conductor of heat. A small quantity of the preparation is now removed from the jar, rolled with the fingers into a cone, and with the pliers carried to mouth of root canal. The copper point being heated, the preparation is very easily pumped up or down, as the case may be, into any canal that the smallest copper point may enter. Occasionally some buccal canals in molars are so minute that the smallest

point will not enter. In these cases I heat them as warm as possible with hot blast and then force the preparation up with a very strong blast from a foot bellows or condensed air appliance.

In some cases where we have a large canal it is well to introduce a gutta percha canal point into the preparation while yet soft, although this is not necessary. In a very few moments the preparation will crystallize, especially if a cold blast is thrown upon it, and any filling material may safely be inserted over it, although where a gold plug is to be inserted I think it well, and in fact recommend a layer of cement over the canal filling.

To Replace a Broken Tooth.

Where a tooth or block has been broken from a vulcanite plate it can very often be reliably repaired by drilling a cavity in the rubber just under the tooth pins, having sufficient undercuts for the retention of the material. Then by filling these undercuts with amalgam freshly mixed, and filling the rest of the cavity, covering the pins with soft solder—scraps of Weston's or Watts' metal preferably. This is accomplished by holding the tooth in place with plaster, or with the index-finger of the left hand, protected with a pad of asbestos, while with any small instrument that will serve as a soldering-iron, the solder is melted, using muriate of zinc as a flux. The work will be quite stable as soon as the amalgam has time to harden. The advantage of the amalgam is that it forms a base upon which the metal used as a solder will flow, and averting its tendency to ball up and pull away from the cavity walls in the vulcanite. The solder will form a good union with the amalgam.—ATKINSON, *Amer. Dental Weekly*.

Formaldehyde Solutions.

In an interesting paper read before the St. Louis Society and published in the *Dental Review*, Dr. Herman Prinz gives the following formulae:

For a general antiseptic wash:

Formaldehyde solution (forty per cent)	-	-	-	drs. iij.
Seiler's antiseptic tablets	-	-	-	No. iv.
Glycerin pure	-	-	-	oz. j.
Water enough to make	-	-	-	ozs. xvi.

Use undiluted.

This gives about a one per cent solution of formaldehyde. Its detergent quality is materially increased by the addition of the alkaline

Seiler's tablets. For a month wash after extractions or as a general dentifrice a further dilution, say one to ten parts of water, is recommended. For sterilization of root canals a five or ten per cent solution of formaldehyde is preferable.

The capping cement consists of a powder, composed of an intimate mixture of:

Dry formaldehyde (paraform)	-	-	-	grs. x.
Calcined sulphate of zinc	-	-	-	drs. x.
Calcined oxide of zinc	-	-	-	drs. xv.

and a liquid prepared by dissolving

Borax	-	-	-	-	-	-	grs. x.
Gum arabic	-	-	-	-	-	-	drs. ij.
In water	-	-	-	-	-	-	drs. xxv.
Formaldehyde solution (forty per cent)	-	gtt.	xx.	Filter.			

Gold.

Gold can best be annealed by placing on a tray of mica or platinum and holding over a flame or by the use of an electric annealing tray. The greatest cohesive property is obtained a little short of redness. The working properties of the various reliable foils makes but little difference to the cautious operator. Of course their manipulation depends somewhat on their manufacture. The crystal golds absorb more impurities and require special care in keeping and annealing. In the use of this form of gold, the tendency is to use pieces that are too large, because being spongy in character, the gold appears to become more thoroughly condensed in manipulation than is really the case. The mistake is also made in increasing the size of the pieces of gold after the extension of the filling beyond the cavity walls and also in increasing the size of the instrument to be used. The tooth, by its physiological construction, is only able to receive a certain blow without injury, hence the condensation of the material is decreased as the size of the instrument is increased. —W. E. GRANT, *Items*.

Deflections of the Nasal Septum as a Factor in Dental Deformities.

In an interesting essay read before the Kentucky Society, and published in the *Items*, Dr. T. C. Evans says: "Deflections of the septum rarely occur before the seventh year. With deflections of the septum we find the high pitched and narrow palate. In proportion as the palatal

processes of the superior maxilla are elevated, the normal contour of the arch is disturbed, its antero-posterior diameter is lengthened and its transverse diameter is shortened. The fact of the association of the high arched palate with deflection of nasal septum is admitted by all. But whether the deflection of the septum causes the high arch or is caused by it is a question not easy to determine. We know that the septum is destined to serve as a prop to push apart the superior maxillae and hold their palatal processes in the horizontal position.

I think it most likely in some cases the deflection of the septum precedes and is responsible for the mal-shaped palate and arch. It seems reasonable that cases of trauma occurring before or during second dentition might, by bending or dislocating the septum, destroy or disturb the support it gives to the palatal processes and allow them to approach the vertical position. This condition is greatly augmented by the fact that following the trauma there is more or less impediment to nasal respiration.

On the other hand, I can readily see how the palatal processes may be forced from their normal or horizontal position and by carrying the septum before them cause it to become warped or deflected. This condition we often see following in the wake of neglected adenoid growths. From the little I know of dental literature I am inclined to believe that dental surgeons attach too little importance to the diseases of the upper air passages as regards their relation to production of dental deformities."

American and Foreign Dental Schools.

In an article entitled "American Dentistry Abroad," by L. C. Bryan, Basel, which appears in the *International*, one finds many pertinent remarks. Among other things he says:

"One advantage foreign schools have over American ones is that if they do not all teach *dentistry* as fully and successfully as American colleges, they require a higher standard of preliminary education. Ours have looked more to the making of practical dentists than to the turning out of highly educated professional men, and in this respect we could learn something from the foreign colleges.

As long as American colleges recognize the degrees of foreign dental colleges and allow applicants from them to enter the senior class while possessing only foreign diplomas, there will be no chance for the recognition of American degrees in the countries where they are now not accepted, and where the American dentist, with his D.D.S. has to make the whole studies from the beginning, with the difficulties of language in his way; and we can get no reciprocity as long as this condition of things

exists. American graduates must make the full course in any of the institutions here I know of, and must make their preliminary examination, "the maturity," and something ought to be done so that American graduates, fully equipped for their profession, shall be admitted on more favorable terms to a course in a foreign college, or else some course of study should be prescribed to the foreign student in America equal to that imposed on Americans abroad generally, if we cannot raise our own preliminary standard higher just yet. But why not?

Therefore I say that the work of the National Association of Dental Faculties committee is very important and has a great task ahead of it, which, let us hope, it may accomplish to the end that Americans may find a foothold in foreign countries, where recent laws have made it almost impossible for them to enter, and agitations are going on to increase the difficulties even more for the "foreigner" from America."

Painless Destruction of Pulps Without the Use of Arsenic.

Dry the cavity out after having removed as much of the debris as practicable without giving a great deal of pain; then take a piece of *soft* spunk, dip it in alcohol (absolute alcohol is the best) and then dip the alcohol laden spunk in crystals of muriate of cocaine, place X in the bottom of the cavity and press a piece of unvulcanized rubber against it quite hard for from one to three minutes, then take out and remove the remaining layers of decay till you thoroughly expose the pulp, and repeat the operation when you will find the pulp has lost all sense of feeling, and you can remove it without the slightest pain.

Be careful to remove all the pulp before filling, as sensitiveness does not return for from ten to fifteen minutes.—A. J. McDONAGH, *Dom. Journal*.

Method for Strengthening Base-Plates.

Take a perforated aluminum plate, used for strengthening rubber plates. It is soft enough to be pressed into place; after which it is placed in a swaging apparatus, and with a few strokes of a hammer it can be forced right down. It can be used as a trial plate, and is very accurate in its adjustment to the mouth. After using it as a trial plate, put it back on the model and strip off the wax, or melt it out. It strengthens a plate wonderfully. It can be used either with a plaster or metal model, and the process for the two is very much the same.—J. S. THOMPSON, in *Dental Weekly*.

Backing Pins.

Many ways are given for disposing of the pins after the backing is adjusted to a porcelain facing. How is this? With a sharp chisel or graver placed a little up on the pin, but toward the backing, the little particles or shavings fold on to the backing. After cutting around the pins in this way, clip off the extra length with cutting pliers, then the remaining portions can be burnished to the backing covering any enlargement of the holes that might accidentally have been made, thus precluding the possibility of borax insinuating itself between the metal and facing.—DR. WEAVER, in *Dental Weekly*.

New Publications.

ORAL PATHOLOGY AND PRACTICE. A Text-Book for the use of Students in Dental Colleges and a Hand-Book for Dental Practitioners. By W. C. Barrett, M.D., D.D.S., M.D.S., Professor of Oral Pathology in the University of Buffalo Medical Department; Professor of Dental Anatomy and Pathology in the Chicago College of Dental Surgery; Professor of Principles and Practice of Dentistry and Oral Pathology in the University of Buffalo Dental Department; Oral Surgeon to the Buffalo General Hospital, etc. Philadelphia: The S. S. White Dental Mfg. Co., Pub., 1898.

This work has a striking individuality and is distinctly Barrett. The author wrote the book primarily for students and it presents his views on pathology as taught to his classes. He has purposely refrained from including abstracts of other writers, and from "padding," so the book shows a personality seldom seen in our text-books and is so well condensed that there seems to be but few if any superfluous words. These two features make it a valuable work not only for students, but every practitioner as well.

It is a work on pathology proper and includes nothing but pathology; there being no reference to manipulative work in it, except incidentally. As the profession advances there is more and more demand for the specialization of subjects. In the past it was thought necessary to crowd all dental subjects into one volume, and in fact we have books to-day that comprise anatomy, physiology, pathology, materia medica and therapeutics, operative and mechanical dentistry, crown- and bridge-work, orthodontia,

oral surgery, etc., all included in one volume. The consequence is that no one subject is complete and these books are too voluminous for text books, and not satisfactory as books of reference. Twenty-five years ago a man could acquire all there was of dentistry in two terms of four months. Now he cannot begin to do it in three terms of seven, but must take post graduate study. All branches have developed to such proportions that it is necessary to specialize and include but one branch in a book, would it be kept within convenient size for a text book.

These text-books should be prepared by men of authority in the individual subjects treated. This is what we find in Dr. Barrett's work, for he is to-day one of our most prominent pathologists.

This book is not a treatise, and surgical or operative procedures form no part of its scheme. Dr. Barrett, in his preface, says: "It has been the aim of the author to consider as succinctly as is consistent with clearness, the functional derangements of all the oral tissues that properly fall within the compass of a broad dental practice. In addition to this there are certain constitutional disorders, the effects of which may be observed in and about the oral cavity, that have not as yet been incorporated into our specialty, and perhaps never will be, yet of which it is essential that the dentist should have sufficient knowledge to enable him to make a clear diagnosis, even if he should not purpose active remedial measures. Such disorders as facial paralysis, syphilis, and tumors have therefore been given general consideration, but practitioners who wish to make a more exhaustive study of those subjects are referred to special works upon them.

It should not be expected that a writer would blindly and unreservedly follow even accepted practice when in his opinion it is founded in error: such a course would make him a mere echo, and would inhibit originality and progress. If, therefore, the author has advanced his own ideas upon subjects concerning which there is a difference of opinion, he believes them entitled to candid consideration in the light in which they are presented. If not found in harmony with clinical experience and observation, they disprove themselves."

The book opens with a chapter on general considerations, then bacteriology is taken up and a classification of the various micro-organisms is given. Then follows a concise chapter on

fermentation, bacteriological pathology, and septic and aseptic conditions are next considered, and then comes inflammation and the pathological conditions presented in the various oral diseases, etc., etc.

As we stated, the book is very concisely written and it is a pleasure to get right at the meat of a subject as soon as one begins a chapter. Then there are sub heads printed in darker type setting forth the principal topics or portions of the text that should be emphasized. These occur here and there throughout the book and are a valuable addition. There is so much good thought and teaching in the book that it is impossible to refer to it all in a limited review, but we hope to publish extracts from the work in a future issue of the JOURNAL. The book contains 234 pages, is well printed and bound, and is a book that we can unhesitatingly recommend to regular practitioners as well as to students, and we hope it will reach the popularity it deserves.

A TREATISE ON PLATELESS DENTURES. By C. A. Samsioe, Practicing Dentist in Stockholm. Translated from the Swedish by D. O. Bell. Stockholm: Pub. by the author, 1898.

Dr. Samsioe's book of 158 pages is divided into three sections.

The historical section gives a clear and concise review of the many methods which have been used and are still being used in putting in pivot-teeth.

In the second section of the work, the author principally speaks of the treatment of roots with living and gangrenous pulps and roots affected by pericementitis, all with respect to the insertion of plateless dentures.

In the main section of the book, the author's method of making plateless dentures or bridge-work is described with great clearness.

After describing the single pivot-tooth secured to its own root or to an adjacent tooth, the author gives us a preliminary description of the principles upon which dentures consisting of several teeth are based and a detailed specification of all the manipulations necessary in making a typical denture consisting of four teeth secured to two roots. Then he proceeds to describe a denture of two connected teeth, and the different ways in which

three connected crowns can be inserted. The author next devotes a whole chapter to the description of a large collection of models of mouths, with numerous defects which he has himself remedied.

The illustrations, 48 in number, are photogravures from casts of actual cases in practice.

SOCIETIES.

The National Association of Dental Examiners.

NOTICE is hereby given that the next annual meeting of the National Association of Dental Examiners will be held at Washington, D. C., commencing ten o'clock A. M., Thursday, October 13th, and continuing in session the 14th and 15th. The headquarters will be at "The Hamilton," 14th and K streets, opp. Franklin Park. The rates will be \$2.00 and \$2.50 per day.

Members can communicate with Dr. H. B. Noble for additional information regarding accommodations.

The poll vote closed August 9th, with 72 votes for Washington, 20 for Louisville, 17 for Chicago, and 12 for Omaha, balance scattering.

CHARLES A. MEEKER, D.D.S., *Sec'y*,
29 Fulton St., Newark, N. J.

Vermont State Board of Dental Examiners.

THE next meeting of the Vermont State Board of Dental Examiners will be held at the Pavilion Hotel, Montpelier, October 18th, 1898, 2:30 o'clock in the afternoon.

GEO. F. CHENEY, *Sec'y*,
St. Johnsbury.

Commencement.

UNIVERSITY of California, College of Dentistry, at its commencement graduated forty-five students. Total attendance for the year, 162.

Bi-State Dental Meeting.

THE Bi-State dental meeting of the Northern Indiana, and South-Western Michigan Dental Societies, will be held at Elkhart, Indiana, Wednesday and Thursday, September 21 and 22, 1898.

This meeting promises to be one of unusual interest and profit. All members of the profession are cordially invited to attend.

F. P. ADAMS, *Sec'y*,
Northern Ind. Dental Ass'n, Elkhart, Ind.

List of Committees

FOR THE JOINT MEETING OF THE SOUTHERN BRANCH OF THE
NATIONAL DENTAL ASSOCIATION AND THE LOUISIANA
STATE DENTAL SOCIETY.

To be held in New Orleans, February, 9-13, 1899:

Committee on Arrangements, in subdivisions. *Transportation*.—Drs. Joseph Bauer, chairman, New Orleans, La.; Jules J. Sarrazin, New Orleans, La.; C. L. Alexander, Charlotte, N. C.; Ed. M. Kettig, Louisville, Ky. *Hotels and Quarters*.—Drs. J. Rollo Knapp, chairman, New Orleans, La.; Joseph Bauer, New Orleans, La.; Wallace Wood, Jr., New Orleans, La.; L. D. Archinard, New Orleans, La. *Hall, Exhibits and Arrangements*.—Drs. L. D. Archinard, chairman, New Orleans, La.; Joseph Bauer, New Orleans, La.; Phil. Friedrichs, New Orleans, La.; Chas. Mermilliod, New Orleans, La.; A. J. Foret, New Orleans, La.

Committee on Clinics (Southern Branch N. D. A.)—Drs. T. P. Hinman, chairman, Atlanta, Ga.; J. Rollo Knapp, New Orleans, La.; R. K. Luckie, Holly Springs, Miss. (Louisiana State Dental Society). Drs. And. G. Friedrichs, chairman, New Orleans, La.; J. F. Johnston, Ruston, La.; L. D. Archinard, New Orleans, La.

Committee on Publications.—Drs. Shep. W. Foster, chairman *ex-officio*, Atlanta, Ga.; E. P. Beadles, Danville, Va.; C. L. Alexander, Charlotte, N. C.

Committee on Oral Hygiene.—Drs. L. M. Cowardin, chairman, Richmond, Va.; S. W. Foster, Atlanta, Ga.; J. Percy Corley, Greensboro, Ala.; I. Simpson, Rock Hill, S. C.; B. F. Arrington, Goldsborough, N. C.; J. N. Crouse, Chicago, Ill.;

W. T. Arrington, Memphis, Tenn.; L. Augspath, Little Rock, Ark.; S. Dickson, Bolivar, Tenn.; E. F. Adair, Harmony Grove, Ga.; F. J. S. Gorgas, Baltimore, Md.

Committee on Prosthetic Dentistry.—Drs. J. A. Dale, chairman, Nashville, Tenn.; Geo. Evans, New York, N. Y.; Ed. Eggleston, Richmond, Va.; Albert B. King, Baltimore, Md.; W. H. Morgan, Nashville, Tenn.; J. G. Fife, Dallas, Texas; L. D. Carpenter, Atlanta, Ga.; W. H. Cook, Denton, Texas; J. L. Wolf, Washington, D. C.; Jas. S. Knapp, New Orleans, La.

Committee on Orthodontia and Oral Surgery.—Drs. George Hardy, chairman, Baltimore, Md.; L. M. Cowardin, Richmond, Va.; A. R. Melendy, Knoxville, Tenn.; J. E. Orrison, Baltimore, Md.; W. W. Corley, Talladega, Ala.; H. Marshall, Atlanta, Ga.; Jules J. Sarrazin, New Orleans, La.; E. P. Kerahs, Charlotte, N. C.; R. C. Young, Anniston, Ala.; F. L. Wood, Roanoke, Va.; Wm. Younger, Chicago, Ill.

Committee on Operative Dentistry.—Drs. J. G. Fife, chairman, Dallas, Texas; A. P. Johnston, Anderson, S. C.; J. Edwin Boozer, Baltimore, M. D.; J. E. Orrison, Baltimore, M. D.; B. Holly Smith, Baltimore, Md.; H. D. Boyd, Troy, Ala.; E. L. Hunter, Fayetteville, N. C.; L. A. Smith, Port Gibson, Miss.; Sam. Rambo, Montgomery, Ala.; C. Sill, New York, N. Y.; J. M. Quattlebaum, Columbia, S. C.; W. H. Burr, Madison, Ga.

Committee on Chemistry, Metallurgy, and Anatomy.—Drs. Albert B. King, chairman, Baltimore, Md.; J. H. Benton, New Berne, S. C.; M. C. Marshall, St. Louis, Mo.; B. H. Teagne, Aiken, S. C.; Chas. S. Grindall, Baltimore, Md.; B. J. Quattlebaum, Winnsboro, S. C.; W. H. Ewald, Portsmouth, Va.

Committee on Pathology, Materia Medica, and Therapeutics.—Drs. H. H. Johnson, chairman, Macon, Ga.; H. A. Parr, New York, N. Y.; R. H. Jones, Selma, N. C.; E. B. Marshall, Rome, Ga.; J. T. Calvert, Spartansburg, S. C.; R. K. Luckie, Holly Springs, Miss.; J. W. Smith, Baltimore, Md.; F. Y. Clark, Saratoga, N. Y.; F. L. Wood, Roanoke, Va.; W. T. Coles, Newman, Ga.

Committee on Microscopy, Histology, and Bacteriology.—Drs. W. T. Martin, chairman, Yazoo City, Miss.; H. A. Lowrance, Athens, Ga.; S. J. Cockerill, Washington, D. C.; S. G. Holland, Atlanta, Ga.; F. C. Wilson, Savannah, Ga.; V. E. Turner, Raleigh, N. C.; W. R. Clifton, Waco, Texas; B. Rutledge, Flor-

ence, S. C. ; C. T. Brockett, Atlanta, Ga. ; T. P. Hinman, Atlanta, Ga. ; W. H. Ewald, Portsmouth, Va. ; J. A. Tigner, Rome, Ga.

Committee on Appliances and Improvements.—Drs. T. M. Allen, chairman, Birmingham, Ala. ; F. H. McAnnally, Jasper, Ala. ; D. E. Everitt, Raleigh, N. C. ; W. H. H. Thackston, Farmville, Va. ; J. P. H. Brown, Augusta, Ga. ; J. E. Orrison, Baltimore, Md. ; J. Rollo Knapp, New Orleans, La. ; Ed. D. Frost, Elizabeth, N. J. ; Louis Dotterer, Charleston, S. C.

Committee on Education, Literature, and Voluntary and Special Essays.—Drs. T. B. Whitby, chairman, Selma, Ala. ; R. D. Seals, Ft. Smith, Ark. ; J. A. Harris, Baltimore, Md. ; J. A. Hall, Collinsville, Ala. ; J. A. Chapple, Atlanta, Ga. ; H. W. Morgan, Nashville, Tenn. ; B. T. Brabson, Knoxville, Tenn. ; R. A. McDonald, Griffin, Ga.

Entertainment Committee.—Drs. Joseph Bauer, chairman, New Orleans, La. ; J. Rollo Knapp, New Orleans, La. ; C. V. Vignes, New Orleans, La. ; E. J. Zeidler, New Orleans, La.

Carnival Balls Invitations Committee.—Drs. J. Rollo Knapp, chairman, New Orleans, La. ; Joseph Bauer, New Orleans, La. ; Wallace Wood, Jr., New Orleans, La. ; L. D. Archinard, New Orleans, La. ; E. Telle, New Orleans, La. ; V. K. Irion, New Orleans, La.

C. L. ALEXANDER,

Cor. Sec'y Southern Branch National Dental Association.

OUR AFTERMATH.

MARRIED.—Dr. F. S. Anderson, of Richmond, Ind., and Miss G. Mabel Whitner, of Akron, were married at the home of the bride's parents, June 29th, 1898. Dr. Anderson is a graduate of the Dental Department, Western Reserve University.

A DENTIST AS POSTMASTER.—Dr. J. H. Boger, a prominent dentist of Findlay, Ohio, has been appointed postmaster of that little city. After so many years practice in filling we feel sure he will keep up his reputation and fill the position in a manner becoming a first class dentist.

DENTAL THIEVES.—In southern Michigan and northern Ohio dentists have been robbed of gold by thieves who seem to go from town to town with this as their object. We hope this timely warning to others may put them on their guard and not only save them their gold but bring the guilty parties to justice.

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CONTRIBUTIONS.

Ancient Japanese Dental Art.

BY T. A. LONG, PHILADELPHIA.

At the Tri-State Meeting of the Ohio, Indiana and Michigan Dental Societies, held at Put-in-Bay, Ohio, June, 1898, there was on exhibition by The S. S. White Dental Mfg. Co., a collection of Japanese dental instruments and appliances, together with examples of their art and skill in the making of artificial dentures, that was very interesting. This collection was made by their representative during a tour of nearly a year around the world in search of new fields for the sale of American dental supplies; a great part of the time being spent in Japan among the dentists and dealers in dental materials. Most of the teeth plates are made of wood, some of ivory, while the teeth are in most cases carved from a greenish-gray stone which closely resembles the natural teeth in color. Many plates are carved with the teeth on, all in one piece. These are presumably for the poorer classes, being cheaper to make. The stone and ivory carvings of teeth are set into the carved wooden plates and held in place by a peculiar kind of twine resembling our sea grass (so-called) fishing-lines. A hole is drilled through the teeth from one approximal side to the other and corresponding holes are drilled through the plate late-

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

rally. The teeth are placed in their respective places carved out to receive them; the string is passed through the plate and tooth alternately, and drawn up tight until all are in place. When the plate is finished no sign of the string can be seen and the fitting of the teeth into their places is so perfect that no spaces between the wood and the teeth are visible. Some of the plates on exhibition have been worn twenty or thirty years, and upon removing some of the teeth from their sockets the string is found to be very strong. They use no molars, only the eight front teeth, the grinding surface being composed of little thick-headed nails, the entire surface where the grinding is done being entirely covered by the nails. Some of the plates show that the heads of the nails have been entirely worn off from use.

The finest sets have human teeth instead of stone or ivory and their arrangement shows a marked artistic ability in the maker. In fact, this is quite apparent throughout the entire collection. Some have the receding gums in both upper and lower plates, especially in the sets formed of human teeth. The carvings of partial dentures from ivory show remarkable skill and artistic taste. One specimen, a single tooth, a superior lateral incisor, is a human tooth set in ivory and held in place by filling a large hole drilled through the setting laterally, with dry cotton, the moisture making it bulge out and press against the adjoining teeth. Many of the teeth are stained black. These are for married women, it being the custom in Japan for women when they marry to be allowed to wear black teeth, and is considered a mark of beauty and honor. The married women also stain their natural teeth, and an outfit is shown for that purpose. This operation has to be attended to frequently in order to keep them up to date, black and shiny. The custom is fast dying out, however, and the sale of black teeth to Japan is dropping off yearly.

Many of the plates presented to our agent were said by the dentist to be at least two hundred years old. Some of them have tags attached to them stating the name of the person who had worn them. In most cases they were persons of note in the empire. The name of the dentist is also given.

The tools for wood-working consist of saws, chisels, gouges, drills, etc., and are quite crude. Their saws are very thin, not much thicker than writing paper and about a foot long, with the teeth set for a draw cut. They cut rapidly and are finely temp-

ered. They make use of leaves and grasses for finishing wood-work, said leaves and grasses having on their surface a gritty substance resembling fine pumice stone. They use files made of a piece of wood cut to the desired shape and covered with a piece of shark skin, the skin having a dense covering of minute sharp shells, which cut wood quite well. Their extracting instruments are very primitive and some of them perhaps as old as dentistry. One specimen consists of a piece of wood or handle about three inches long, with a strip of iron bent on itself, $\frac{1}{4}$ inch wide like the letter U, and fastened to the handle by winding a cord around it with the handle inside of the U, and the loop end projecting over the end far enough to encompass a molar tooth. This is concealed in the hand of the operator and the loop is placed over the tooth and a twisting motion removes the tooth. A looker on would say the tooth was taken out with the thumb and finger of the operator.

Another instrument for extracting consists of a piece of steel about six inches long and $\frac{1}{4}$ inch wide at one end, and $\frac{1}{2}$ inch wide at the other end, and about $\frac{1}{4}$ inch thick. The small end is made slightly concave, leaving a sharp edge on each side. The sharp edge is placed against the tooth near the neck holding the instrument so that a blow will force it upward or downward as the case may be and the instrument is struck with a piece of lead weighing about two pounds held in the *heart* of the hand.

Their instruments for operations in the mouth, in this collection, are very clumsy, only a few are shown, principally chisels and scalers. This exhibit relates to their methods of practice and instruments used years ago. The people of Japan are making rapid strides in dentistry. They have now in Tokio a College of Dentistry with over 200 native students, with native teachers educated in American colleges. It will not be many years before their competition will be felt among all the civilized nations of the earth. They are a quick-witted, active, ingenious, good-natured, and intelligent race.

They are now publishing three dental journals in Tokio and there are a large number of native dentists practicing dentistry in the empire who have graduated in European and American Dental Colleges.

Notes from Practice.

BY DR. F. H. HOOD, MORENCI, MICH.

I HAVE been using a preparation of cocain, for local anesthesia, composed of $\frac{1}{200}$ grain atropine to $\frac{1}{2}$ grain cocain.

In using this preparation I had an experience similar to that described by the gentleman in the July JOURNAL. I had placed a $\frac{1}{2}$ grain tablet in 60 drops of water and was injecting into gums, when a few drops were reflected back into one eye, which immediately caused the pupil to enlarge; at the end of eighteen hours the pupil was still noticeably larger than that of the opposite eye. The amount striking the eye, figuring from the strength of solution used, would amount to about $\frac{1}{1000}$ grain of atropine.

AN EASY AND QUICK WAY TO REPLACE A BROKEN TOOTH

in a rubber or celluloid base, is to remove all pieces of tooth and pins, cut retaining form where pins were, with the engine bur, place the new tooth in position and stick it to the approximating teeth by placing sticky wax over the labial surfaces. Then fill retaining form and around pins of the new tooth with amalgam. Leave wax in place until amalgam has hardened.

Removal of the Dental Pulp.*

BY DR. B. HOLLY SMITH, BALTIMORE, MD.

IN proportion as medicine has grown scientific and skillful, less dependence is placed on the therapeutic effects of drugs for the alleviation of human ills. Secondary effect has assumed greater importance, and possible evils attending administrations have outweighed the advantage of immediate relief.

For more than half a century practitioners of dentistry have relied upon the application of arsenious acid to the dental pulp, with a view to its destruction. Has any one found the exact limits of the destructive power of that agent? Has the use of this material been attended with no secondary evils? That perice-

* Abstract of Paper read before the National Dental Association, Omaha, Sept., 1898.

mental disturbances do frequently occur, can be stated without fear of dispute; that arsenic may be the cause has long been the thought of the writer, an opinion formed through observation of the contrast between teeth made pulpless through surgical procedure, pure and simple, and those from which the pulps have been removed after the application of arsenical preparations. The well-known germicidal qualities of arsenic would indicate that no trouble should be expected from the contents of the tubuli which have been subject to arsenical application, and sealed from the chance of subsequent infection; yet trouble not infrequently does arise in after years, even where there is reasonable certainty that the apex was entirely closed.

Why? Is it possible that a sleeping volcano has been located in the apical space, by the application of arsenic; that the effect of the agent has not been limited to the confines of the pulp canal and dentinal tubuli; that the area of tissue affected breaks down, in seasons of depressed vitality, or becomes infected through the medium of the circulation? The apical opening may be infinitesimal, but it must be large in comparison with the tubuli in the dentine. Why may not the nerves and vessels in the apical space and a considerable area of the pericemental membrane have a share in the action of the arsenic? There is no positive evidence of a well-defined line of demarcation in the effect, even after the agent passes the point where it has power to destroy. May it not deplete and incapacitate the tissues until danger is invited and may subsequently follow?

Dr. Smith then quoted from Dr. J. Foster Flagg (1877) on the effects of arsenic taken into the bloodways; from Arkovy, on the inflammation concomitant with the dying of the pulp; from Dr. Burchard's recently published work, "Dental Pathology and Therapeutics," on the specific action of arsenic; from Dr. I. P. Wilson (1888) on its effects upon the cementum, and from Dr. Kirk (1898) on inflammatory action and bacterial invasion, thence deducing an explanation of the pathological expressions occurring in the apical space of teeth which have been treated with arsenic, drawing the conclusion that arsenic should no longer enjoy its universal popularity, but should give place to surgical procedure.

A change in this respect involves not so much the absence of other means as aversion to change of practice, and the well-fixed habits of treating teeth without charge, giving two hours to

filling a cavity with gold, and five minutes to the destruction of a pulp. If, as we claim, we are dental surgeons—not mere cavity-stoppers—this is not right, and must be changed.

The conditions essential for pulp removal by operative procedure were then considered, and the method of treatment outlined as follows: To the dental surgeon, as to the general surgeon, the necessity for operative procedure must be evident, and the field of operation be in as favorable condition as can be obtained. No effort should be made to remove a pulp in a high state of inflammation; employ antiphlogistic agents until irritation has subsided. Flood the cavity with a tepid solution of bicarb. soda. Then close cavity with a pledget of cotton saturated in cocain hydrochlorate for a few moments, avoiding pressure, and taking great care not to cause pain. Adjust a concave disk of vacuum-cavity material, so that its edges will impinge upon the walls of the cavity and prevent pressure. Under this disk place a pledget of cotton saturated with oil of cloves. Cover with temporary stopping, paint the gums with aconite and iodine, equal parts, and dismiss patient until one, or preferably two hours, can be given to the operation of removal, when, if conditions are favorable, the pulp may be cocainized with the electric current and removed, using minimum amount of current, and a saturated solution of cocain. If cataphoresis is not successful in the highest sense, supplant by a general anesthetic, preferably nitrous oxide.

When teeth containing living pulps are to be excised or ground down, advantage can be taken of the opportunity to remove the pulp under the influence of the shock of excision, which can be done with no pain. Cut the enamel with disk or bur, leaving for the forceps only so much as will not require stress or violence. Having ready in the engine a cone-shaped bur, clean and sharp broach, etc., remove the pulp immediately by passing the broach quickly to the apex, twisting the pulp out in-toto.

The most inviting field for the surgical operation is found in single root teeth, but it can be employed in the molars if the effort is painstaking. Surgery is not only more scientific, but is also proven to be more successful. A plea for this change in method should, therefore, not pass unheeded.

DISCUSSION.

DR. BARRETT said there was much in the subject which needs clearing up. The author of the paper attributes the death of the pulp, under arsenical applications, to the action of the arsenic on nerve tissue, but arsenic is a corrosive agent ; it induces necrosed conditions in osseous tissue. If death of the pulp is due to constriction at the apical foramen, from forced stasis, how is it caused when there is no open foramen? If the arsenic is not securely sealed in the tooth-cavity, the effects are just as fatal upon the buccal tissues as upon the pulp tissue itself.

DR. HUNGERFORD thought the spirit of the paper was not an exemplification of pathological conditions, the use of therapeutic agents and surgery being the keynote. He is opposed to the contamination of the blood stream by the introduction of therapeutic agents by hypodermic injections. He treats pulps surgically, varying the method according to conditions. After the application of arsenic to the pulp, death is due to congestion in the pulp chamber, not at the apical foramen.

DR. PATTERSON: Pericemental inflammation, after pulp removal, can always be avoided by removing the pulp by surgical methods. Cocain can be forced into the pulp until it is completely anesthetized, using very finely pulverized crystals of cocain. With the chlorid of ethyl spray the pulp can be so congealed that cocain can be forced into it by means of pressure with spunk, cotton or unvulcanized gutta percha. The pulp can then be removed absolutely without pain.

DR. TAFT abandoned the use of arsenic twenty years ago. Its effects are objectionable, not only upon the pulp itself, but by extending to other tissues. The results are too uncertain. With the increase of facilities, other methods are so efficient that there is no longer any excuse for its use. Cocain, finely pulverized and dissolved, is readily taken into the pulp by absorption, until it is so anesthetized that it can be removed with as little pain as a paring from the finger-nail. When the pulp is removed by surgical procedure and all soft tissues removed from the canal and hemorrhage arrested, then is the time to close it. Seal it up immediately, and there is no liability of any changes pernicious to its welfare.

DR. WATKINS prefers, when he has a large cavity with free

access, to punch it out with a slim piece of orange wood. It is instantaneous, the pulp is removed entire, and the tooth is ready for filling.

DR. BARRETT: Those who oppose arsenic as a dangerous drug, advise the use of cocain! Which is the most dangerous? It is "jumping from the frying-pan into the fire."

DR. H. B. SMITH: The surgeon who uses cocain knows the liabilities. He is prepared to combat evil effects, which he knows how to counteract. The trouble with arsenic is, that we do not know how far-reaching its effects may be in any case.

DR. CRAWFORD spoke of the importance of preventing septic infection (which he prefers to call toxic invasion) by stopping each root as soon as the canal is emptied, not leaving it open to serve as a means of self-destruction, while operating in the other canals.

DR. SMITH, in closing the discussion, said that he had desired to present the record of some clinical cases, but had decided to wait and study them further.

A Monthly Summary from Our Foreign Exchanges.

Translated expressly for the OHIO DENTAL JOURNAL.

By H. PRINZ, D.D.S.

Action of Arsenious Acid and Thymol.—The use of arsenic for cauterizing pulps is, for the dentist, of the same importance as the use of chloroform in surgical operations (Ad. Witzel). This statement is still true to-day. Three men have made it a special study to investigate the action of arsenic upon inflamed pulps, viz: Ad. Witzel, Miller and Arkovy.

Ad. Witzel: The action of arsenic is limited to the inflamed part of the tooth-pulp, the deeper the inflammation, the deeper the cauterization. The tooth-substance is not involved. The nerve endings are first acted upon.

Miller studied the action of arsenic upon the pulps in teeth of dogs and rabbits and the tails of white mice. The predominating symptoms were enormous swelling and œdema wherever the arsenic came in contact with living tissue.

Arkovy found the pulps in an inflamed hyperemic condition after the application of arsenic. The axis cylinders of the nerve-cells disappear, the capillaries are enlarged and show formation of thrombi and embolism.

The author conducted a series of laborious and most interesting experiments upon the eyes and their appendages in rabbits, using arsenous acid and thymol in various modifications. Thymol did not prove itself useful as a cauterizing agent. Arsenious acid is a non-coagulant of albumen, having a deep corroding action upon living tissue and strong diffusive qualities, more so, if it is employed in the pure state, according to the formula :

R Acid, arsenious, - - - - - 3j
Glycerin q. s. to make a soft paste.

The paste should be applied upon the freely exposed, bleeding pulps ; infiltrated material or pus exudations should be carefully removed previous to the application. The cavity should be plugged in such a manner as to allow room for expansion of the pulp to prevent oedematous swelling and pain.—*Dr. Julius Witzel, Correspondenz Blatt für Zahnärzter.*

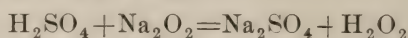
New Methods of Treatment of Diseased Pulps.—Writer used in the beginning the 40% solution of formaldehyde for obtunding sensitive dentine, but after he had found that two pulps had died and even weaker solutions, such as 5%, were not without danger to the pulp, he condemned the drug for such purposes. After various experiments, he used a paste for mummifying pulp stumps, the remaining portion after amputation of the crown part. The paste is prepared as follows :

R Cocain.
Thymol, aa 1.0 (15 grs.)
Mix very accurately and add—
Sol. formaldehyde (40%) gtt. x.
Tinc. oxid., 2.0 (30 grs.)
Mix to paste.

After arsenic has been applied for 48 hours the crown part of the pulp is amputated, the pulp chamber is cleaned with 5% sol. formaldehyde, the paste is applied on cotton and the cavity is sealed with cement or gutta-percha and a permanent filling put in. 500 cases of chronic and acute pulpitis were treated according to this method with not a single failure.

The paste should come in intimate contact with the pulp remnants. Author states that this method should be resorted to only in cases where the pulp cannot fully be removed, a total extirpation is always preferable, if possible.

Furthermore, he makes a modification of Callahan's sulphuric acid treatment of root canals by necrosis of the pulp. He neutralizes the sulphuric acid with sodium peroxide, instead of sodium bicarbonate. A violent evolution of peroxide of hydrogen is the result according to the formula:



The H_2O_2 removes all debris, the same time sterilizing the canals. Na_2O_2 needs careful handling, the broach should always be moistened before introducing the powder.—*Dr. Bænnecker, Vert. Ung. Vierteljahrschrift für Zahnheilkunde.*

Schleich's Methods of Cocain Injection.—Feindal has used Schleich's solution No. 1 with great success. (Solution is composed of cocain 0.2, morphin 0.025, sod. chlor. 0.2. 5% solut. acid. carbol 2 drops, water 100°). To prevent the pain of the needle prick he paints the gum with a 4% cocain solution. Contrary to Schleich he injects as deep as possible, so obtaining complete anesthesia in a short time without bad after-effects.

Clerc's experiments with these same solutions are in full accordance with Feindel's, but he believes that Schleich's solution has no specific analgesic action as other alkaloids will have the same effect, even pure water where used: avec un pende suggestion.—*Archives Nationales de Stomatologie*, '98.

A Case of Phosphor-Necrosis of a Heavy Smoker Resulting in Death.—Patient, a tailor of good health and moderate habits, except excessive smoking of cigars. He uses about 20 cigars in a day and about 15 to 20 lucifer matches for every one, as he frequently interrupts the smoking during his work. For the last twenty years he inhaled the vapor of phosphorus of a daily consume of over a hundred matches. Patient first noticed pain in the right eye, swelling followed, involving the whole side of the face. An abscess in the oral cavity yielded a free flow of pus by opening it up. Patient grew worse, the superior maxilla was finally removed, as diagnosis showed it to be phosphor-necrosis. In a few months a new operation was necessary, but the patient collapsed, dying in delirium of meningitis.

Patient never worked in a match factory, but as his teeth were in a very bad condition, they offered free access to the vapors of phosphorus from the lucifer matches.—*L'Odontologie*, '98.

Extraction of a Tooth by the Aid of a Rubber Band.—Dr. Bennett had to extract a tooth of a hemophile. As he knew the condition of the patient from previous experience, he was afraid to use the forceps. He put a tight rubber band about the tooth; in a few days the tooth was removed without a drop of blood, although it was considerable painful. Bourdet in 1757 used the above method successfully and it is claimed Japanese and Chinese dentists employ it also (?).—*L'Odontologie*, '98.

(Dr. F. Flagg treated two cases in this way successfully.—*Vide Dent. Cosmos*, 1880, p. 13.—Ed.)

Deaths Resulting from General Anesthesia.—In his work: "Hand Buch der Inhalations—Anæsthetica," Dr. Ernst Hankel gives the following statistics of deaths which occurred during the last years from the use of various anesthetics:

Chloroform,	1	death in	2039	narcoses.
Ether,	1	" "	5090	"
Ethyl Bromid,	1	" "	5228	"
Pental,	1	" "	213 (!)	"
Nitrous oxid,	1	" "	500000	"

The Use and Abuse of DeTrey Gold.*

BY C. C. TAGGART, D.D.S., PITTSBURGH, PA.

SINCE the first clinic given before our Society by Dr. C. B. Beall in Sept. last, we have heard so many enthusiastic comments regarding deTrey's gold, that in selecting this subject it has been done with a view of giving facts gleaned from members of our profession in Europe, where Dr. deTrey first introduced the gold about four years ago, as well as my personal opinion after nine months trial, trusting such information through paper and discussion will be of benefit to all.

* Read before the Odontological Society of Western Pennsylvania, June, 1898.

Dr. deTrey claims superior merit for his preparation of his crystal mat gold, as attested by the fact that its sale during its introductory year amounted to one half the entire output of gold material for filling teeth marketed in Europe. An American dentist in Switzerland (a classmate of mine in college) says, "It has been largely sold over here, many are enthusiastic over it at first, especially those who are careless." Inasmuch as claims of a similar kind were made for crystal gold when first introduced more than forty years ago, it is of importance to us to ascertain not how much has been *sold*, but of what service it has been compared to gold foil. Inquiry shows us that some of our members use this gold exclusively; for this reason we permit them to tell us of its use, while we treat largely of its abuse.

One of the necessary requisites of a good filling is its retention in the cavity. We should not therefore be lead from the proper preparation of a cavity by deTrey's advice to prepare as for an amalgam filling. Oh, that we had more men who would endeavor to lift up the careless and superficial dentist in his work instead of the many whose influence is downward. Prepare your cavities for a gold filling, gentlemen, and by so doing be assured you will lose none of the advantages of deTrey's gold; rather you will perform better service for your patient and preserve self-respect to a far greater degree.

If anything should cause this new gold preparation to be looked upon with disfavor and thus it be brought into disuse, it will be the careless, defective insertion of fillings. One European dentist says: "The exaggerated modern enthusiasm has placed it at the head of gold preparations for filling teeth, which accounts for the many more bad fillings of last year than in the five years previous.

The prevailing impression that it can be worked almost as readily as amalgam is the direct result of improperly shaped cavities and hence an imperfect placing and adaptation of the filling. Whether cavities be large or small, simple or difficult in character, the same care in preparation must be observed.

In some cases the use of deTrey's gold is an advantage in starting a filling, as upon pressure it remains where placed, though only in the direction and under the immediate pressure of the instrument, while there are other golds that have the superior advantage of spreading under hand pressure. In cavities inac-

cessible with other gold it is valuable, but we doubt its durability because of the fact that when used in such places it is impossible to apply proper pressure to insure a surface sufficiently hard to resist moisture and consequently it scales off. If you can not start your filling with foil, use deTrey's gold, but do not permit it to come over the edge of the cavity. It is my practice to use foil gold, getting perfect adaptation to all the walls of the cavity and overlapping all edges with it. To me no instruments are so valuable for this part of the work as the right and left pluggers (sometimes called cork-screw pluggers) of that prince of gold workers the late Dr. Webb. Hand pressure principally should be used, as malleting makes the gold hard to work, and as Prof. Darby says "adaptation, and not hardness constitutes the saving quality in cavity filling." The importance of protecting all edges of your cavity with foil can not be impressed upon you too strongly, for should you overlap the enamel wall with deTrey gold, it crumbles off at any angle. Your good judgment must tell you whether or not it will be of advantage to use the crystal gold. In case of a large filling it will save time when used under favorable circumstances. I would not advise using heavier than No. 2 of deTrey gold. It should be annealed to a dark red, placed in position on the gold already used, and pressed into place with Royce and foot pluggers. The deTrey instruments are clumsy compared with the Royce instruments made by the S. S. White Co. Next apply the mallet and use it on each piece of the crystal gold put in the cavity; when you have worked to a favorable surface use a good foot plugger and mallet *each* piece securely to its place, making sure the entire surface is perfectly malleted down, else you will have your patient return some day with fillings that would indicate they had small pox. The friend mentioned before says he has used over one hundred boxes of deTrey's No. 2 and 3 gold, but never finishes with deTrey's. He adds: "I find many dentists do, but I finish the border with foil and have better results, especially at that one place where so many of us have failures, the cervix. I had many failures with it until I understood its workings and have seen failure after failure of other operators who seemed to think it could be worked like amalgam. It cannot be condensed too much. Frequently I have removed fillings that were failing and found the larger part of the filling could be picked out like so much brown sugar.

It has been my privilege to receive a report from three of our profession in this section bearing on one of the first deTrey gold fillings put in by one of our best operators less than a year ago. Permit me in closing to share with you the results as seen by them. One says: "I find it is doing good service, except that it is scaling off. Some call it pitting, but I think the term erroneous." Another reports: "I saw the filling within three weeks and noticed it beginning to pit. It is not at all leaky and the edges look pretty fair now, but it is very badly pitted." The third reports seeing it about a month ago and gives it as his opinion that while it was "saving the tooth" he considered it anything but a first-class filling," having reference to its appearance.

"A Few Observations."*

BY R. B. CUMMINS, D.D.S., BLAIRSVILLE, PA.

SCIENTIFIC experiments are a great thing, but how often they are hobbies ridden to death.

Antisepsis is one the medical and dental professions are exercising now.

Only a few days ago we heard of a mother who was trying to follow out the instructions of the family physician. She said they were about to give up trying to give their son an education as they could not get him sterilized every morning in time to go to school.

It is pleasing to think of the amount of common sense advice that can be given by the dentist at the chair, and of what good fruit it will bear. But if we get into the microbe war and give a long worded wearisome talk of their action on matter, molecules, etc., the patient will begin to wonder how long it takes to fill a tooth anyway.

We must not shirk our duty in respect to teaching patients how to take care of the work or services we have rendered them, as upon their treatment of it depends very much of its permanence. Jonah tried to shirk his work, and remember what came of him.

* Read before the Odontological Society, of Western Pa., June, 1898.

Teeth may be preserved if we do our work well and the patient takes care of it. Dentist and patient must work together or there will be lots of failures and the former will get all to his credit.

Tell patients to brush their teeth after every meal. That they can't shoot without powder and they can't keep their teeth clean without powder. If they cannot brush teeth but once a day, tell them to do so just before retiring.

Encourage patients to learn the value of their teeth and they will appreciate and care for them. Tell the patients who use their influence for you that they cannot do a better work for you than to take good care of the fillings you have inserted for them.

We think we are in the line of duty when crying down the "cheap John's" found everywhere. We could keep some of our patrons out of their hands if we had only been thoughtful enough to tell them just how they should care for some particular kind of mechanism. It failed after patient had undergone a great deal of pain and expense and they conclude to go to an advertising dentist, who says, fearlessly, that he can do work without pain and at very little expense. These patients get into their hands and if satisfied with their ability they are hard to win back, if ever it is done. There is no use saying they cannot do good work, for many *wholesale* dental offices have experts in all their different departments and are so organized that remarkably good services are rendered. We know this is dangerous ground to take, but having seen their work and knowing something of cases brought before them, also knowing this is an age of specialists, we cannot refrain from giving them some credit for deftness and good work. These monopolies understand the business or commercial side of dentistry away above the average practitioner of to day. In the matter of buying dental goods we may learn from them that it is not the most economical way to purchase goods in small quantities. The dentist can see that it takes as much clerk hire to sell and deliver $\frac{1}{4}$ oz. amalgam or $\frac{1}{8}$ oz. gold as to dispose of an order for 20 oz. amalgam or 5 oz. gold. We can see that the manufacturer can afford to sell a large quantity at lower rates than he can to sell it in small quantities. We can see that the buyer of large amounts and the concern that uses up large quantities of material can do so at a smaller profit, and so we see the wholesale dental companies making as large profits as

the dentists, whose ideas of ethics and dental laws are as varied as is the law of each individual State in the Union. When, by a united effort, we can frame a law that will be in accord with the ideas of every State dental society in the Union, we may expect to show to the world that we stand, as one man, for what is right and lawful. Any practitioner who has conducted an honorable practice in one State should be permitted to remove to another, without having to undergo the ordeal of an examination under a board of dental examiners, who do not consider common sense one of the most necessary elements in the conducting of a dental practice. These boards are so often made up of men who are one idea men, or in other words, daft on some particular pet of their own, and should an applicant not accord with him he could not secure his vote. In college the boys soon find the weak spot in a professor and cater to it, but the practitioner is not so fortunate, coming as he does from another State and is necessarily not acquainted with the hobbies of the members of the board, and consequently is looked upon with suspicion by the members of the board, who, perhaps, have not been as much of a success as practitioners, as the applicant for the honor of being a fellow worker with them.

Sydney Smith says, "Let every man be occupied, and occupied in the highest employment of which his nature is capable, and die with the consciousness that he has done his best."

Work is one of the best educators of characters. It gives discipline, self-control, deftness and skill in his special calling. Work is the law of our being and gives aptitude and dexterity in dealing with the affairs of ordinary life. Hobbies are useful as educators of the working faculty. Hobbies bring industry of a certain kind, and at least provide agreeable occupation. It must not be ridden too hard, else, instead of recreating, refreshing and invigorating a man's nature, it may only have the effect of sending him back to his business exhausted and depressed. It is not work, but overwork that is hurtful; and it is not hard work that is injurious so much as monotonous work, fagging work, hopeless work.

When we have done our work on earth—of necessity, of labor, of love, or of duty—like the silkworm that spins its little cocoon and dies, so we depart. But, short though our stay in life may be, it is the appointed sphere in which each has to work out

the great aim and end of his being to the best of his power, and when that is done—

“Approach thy grave,
Like one that draws the drapery of his couch
Around him, and lies down to pleasant dreams.”

Nature's Methods of Defense.*

BY L. P. BETHEL, KENT, O.

THROUGHOUT the life of all organic bodies there is constant warfare; foe attacks foe; a continual battle for existence.

Man, animals and other complex organic bodies are made up of a multiplicity of cells; millions upon millions of these minute particles of living matter uniting to form the whole. Each cell has a life of its own to live, and when it dies it is removed and another is ready to take its place. Thus organic bodies are ever changing. One organ of the body seems constantly trying to outdo some other organ, and, indeed, it would seem that even among cells of the same kind there is not mutual aid, but perpetual strife. Every part that increases, determines the enfeeblement of other parts. The stronger cells attack the older and weaker cells, and, like the Hottentots, kill off the parents when their usefulness is spent.

Bichat said, “Life is the sum of the functions which resist death.” We might represent it as being made up of two principal forces: First, that of building up the organism during the period of growth, and keeping up the repair during middle life and declining years. Second, a resisting force that stands guard ever watchful to keep the system in order, and always ready to resist the attacks of invaders from without.

We have referred only incidentally to the first for the second is the one about which we desire more particularly to speak. Every growth has its foes, and the higher we go in the scale of life the more there is with which the organism has to contend. The resistive force, however, is stronger in some species than in others. Certain plants and trees exhale particular odors or excrete juices that are antiseptic and destroy the parasites that

* Paper read before the Lake Erie Dental Society, June, 1898.

attack them. Although this resistive force is present in all forms of organic life, it is most complete in animals and man.

Man is provided with muscular strength to defend himself against visible things, but it is through the wise provisions of nature that he is enabled to withstand the attacks of invisible foes, such as pathogenic or disease producing germs.

It is interesting to trace the methods of defense with which nature has endowed man, and by way of illustration we will presuppose the presence of disease-producing bacteria seeking entrance to the human body. Let it first be understood, however, that bacteria are vegetable organisms and not animal. They do not fly nor run; they simply grow on favorable soil as a plant would grow.

Being so minute, every disturbance of air will lift them into the atmosphere and they find lodgment on everything. The dust of our streets is laden with germs, and they abound in profusion in places where sanitary conditions are not good. This points out the necessity for good ventilation, keeping our apartments well aired and bathed in sunshine, for sunlight is one of the best of disinfectants. Bacteria find lodgment on our clothes, skin, hair, and we are constantly breathing them. Researches of Professor Thompson showed that under the most favorable conditions, the lowest number of organisms contained in the inhaled air of an hour, was fifteen hundred; and that in a large city the air that passed through the nose in the same length of time was charged with from fifteen to sixteen thousand. Many times even a greater number are present. The fate of the thousands of microbes which thus enter the human body is a question of great pathologic interest, and this increases when it is remembered that expired air is practically free from germs. Fortunately they are not all pathogenic organisms, but they are all invisible to the naked eye; and the pathogenic are intermingled with the non-pathogenic germs, so man cannot select air that is free from them. Here nature steps to the rescue and provides first a nose that is turned downward. Bacteria being heavier than air, they are constantly falling and in consequence fewer are inhaled than would be the case if the nose turned upward and served as a "catch all." But this is not the only precaution against their invasion. When bacteria are inhaled they meet resistive force in the nostrils. First, the vibrissae, or hairs in the nose, arrest many of the in-

haled germs. Others are caught by the mucus and carried out of the nose. The nasal mucus being somewhat antiseptic, the surface it covers is rendered non-suitable for the growth of germs. Then, the cilia of the epithelium are active in ejecting the invaders. We might say, then, that the nose acts as a germ and dust filter, arresting these minute particles before they reach the trachea or bronchi.

The mouth breather runs more risk, for the inhaled germs are carried immediately to various parts of the mouth and throat, the pharyngeal wall and tonsils being favorite locations for development and growth of diphtheria-producing and some other bacteria. Hence the dentist should breathe through his nose, especially when burring out tooth cavities and inhaling the dust.

When we disobey the laws of nature, we take the risk in our own hands. "Keep your mouth shut and save your life," is prudent advice. Yet, in the healthy individual, the germs inhaled or taken into the mouth with food and water, meet immediate opposition. The saliva and mucus in the mouth and throat catch them and they are carried into the stomach to be put to death by the gastric secretions. If any survive this, they are carried by the cilia along the intestinal tract and are eliminated. Should they lodge in the bronchi, they are arrested by the secretions and borne away by the cilia.

The saliva and mucus, in normal condition, are somewhat antiseptic and prevent development of many germs. Yet some do thrive in the mouth, but so long as the tissues are normal, their secreted juices protect them from bacterial attacks. Should bacteria attempt entrance by way of the ear, they are arrested by the epidermis and the secreted wax. If by the eyes, the secretions carry them away. If they are on the skin, they find a barrier in the cells of the epidermis, for there is a continual scaling off of this membrane and adherent bacteria are carried with the scales. Then there are the glands of the skin, throwing out sweat and oily materials that arrest or carry away the bacteria, even though they succeed in penetrating the glands. Here is a plea for cleanliness; for when we bathe, this army of microbes are washed away and the glands are freed from extraneous matter clogging their mouths, and stimulated to renewed action.

Sometimes bacteria get to the internal tissues through a hair follicle or minute opening in the skin, but still all is not overcome

for internal resistance is here encountered. The juices of the body are highly antiseptic and promptly kill or weaken the vitality of the microbes. Now, suppose they withstand all this and succeed in getting into the blood circulation, still they find opposition. In the blood are wandering cells, white blood corpuscles, or phagocytes, that, like some policemen, keep vigilant watch and appear on the spot when the invaders break in, and attempt their immediate arrest. These phagocytes are not so numerous as red blood corpuscles, the red predominating in the proportion of four hundred to one. But when the internal tissues are threatened, the white corpuscles rapidly increase in numbers. They differ from the disk-like red corpuscles, being composed of a plastic protoplasm, which enables them to assume various shapes and to slip into the smallest intercellular spaces. When a bacterial invader reaches the interior of a blood-vessel, it is immediately approached by one of these wandering cells. Phagocytes being of various shapes it is hard to describe their appearance, but we will liken them to a star-fish. The arm-like processes, or pseudopods, as they are termed, branch from all sides of the cell, and, when approaching a bacterium, those nearest the microbe extend out on either side, surround and envelop it. Thus the germ is evacuated and then digested by the phagocyte. Should bacteria be able to resist the attack of these phagocytes, or devouring cells, still they meet opposition. The blood serum is highly antiseptic and thus has microbe-killing properties, and the oxygen taken into the circulation is fatal to many species of bacteria, as carbonic acid is to others. But these phagocytes are not confined to the blood-vessels; they have the power to migrate from one tissue to another and their usefulness is thus enhanced. The medical term for this migratory process is "diapedesis." (Of course it is necessary for physicians always to talk Greek.)

Now, this is the way the human body in a state of good health, defends itself against bacterial attacks, but let the vitality of the system become lowered, through debility or other causes, and it loses some of its resistive power. It is in this abnormal state of the constitution that disease-producing bacteria find it possible to develop within the organism and cause disease by multiplying and excreting toxins that poison not only the tissues on which the bacteria grow, but distant portions of the body, for these poisonous alkaloids are taken into the circulation and are

carried throughout the system. Phagocytes are quite susceptible to the action of bacterial toxins and are weakened or killed by them.

Sometimes a bruise or cut will bring about serious results. Suppose a finger or hand is cut or pricked with a knife, pin, excavator, or any sharp instrument on which there are disease-producing bacteria. These germs are carried into the tissues and inflammation results. The tissues become abnormal and the bacteria, not meeting the natural resistance, are able to multiply. Phagocytes hurry to the place of irritation, and a battle ensues. The microbes multiply rapidly and their excreted toxins act on the phagocytes, killing some and weakening others. The phagocytes pass through the vessel wall and the bodies of those killed go to form pus. If the bacteria can resist the attack of phagocytes and so vitiate the tissues as to be able to grow and multiply there, their excreted toxins gradually act on the surrounding parts and if not checked or limited in their action, they cause blood-poisoning.

But where there is perfect health, disease will not occur, and as fresh air, plenty of exercise, frequent bathing, regularity in eating and sleeping, are all essential to good health, we can ill afford to neglect these important duties. Just so long as we observe the laws of health, we are doing our best to keep out disease.

President's Address.*

DR. THOMAS FILLEBROWN, BOSTON.

DR. FILLEBROWN spoke of the influence of organization, as essential to the success of any movement in which the combined effort of individuals is desired. Nations, peoples and communities require formulated rules for their government and control. Laws are the measure of progress; good laws are not found in corrupt ages, while an enlightened people will not tolerate evil laws. Applying the principle of law to our organization he said that in the past it was as good as the material of which it was composed would afford. The present association will be no better

* Abstract of address before the National Dental Association meeting, Omaha, Sept., 1898.

than the knowledge, culture and efforts of its members make it. The things most essential to the success of an organization are brains, education, enthusiasm and an unselfish devotion, that will bring to, and lay upon the altar of science, the sweet incense of the best efforts of every member. Professional relations must be governed by an entirely unselfish principle. He then spoke of the two distinctly new features of the present constitution; first, the creation of the divisions of the East, the West and the South; a feature of cosmopolitan character, which must awaken wider interest in the meetings and increase the membership, while guarding against sectional control. The second distinctive new feature is the formation of branches, through the influence of which it is expected that many will become actively connected with the national association, working in harmony with it, who would not otherwise join its ranks. Its practical and successful working has been shown by the southern branch during the present year, and repetition of such success may be looked for. With branches working in harmony with the parent body, the proceedings published in the volume of the national association will furnish a complete record of the scientific progress of the profession during the year. The president spoke of the manner of securing delegates as being perhaps too complicated, the limitation of delegates to State societies perhaps keeping many good men out of the association. The true value of professional organization lies in the wider diffusion of knowledge, culture and refinement; hence, open wide the doors and go out into the streets and byways and compel men to come to the feast. Honor is accorded to those who impart their knowledge the most freely. He spoke of the future of the association as appearing especially bright and encouraging. Whatever of shadow may have hung over the profession in the past, whatever of prejudice, ambition or adverse interests may still exist, there is light upon its pathway in the future. The future promises much for the increase of scientific knowledge, the advancement of professional interests, and the promotion of the welfare of humanity.

The Improved Electric Oven and the Means of Determining its Heat.*

BY L. E. CUSTER, B.S., D.D.S., DAYTON, OHIO.

THE difference between the melting point of the high fusing porcelains and the platinum wire which produces the heat is very small and yet it is within this narrow margin that the electric oven operates..

The perfection in detail of the electric oven has all been in the direction of producing the highest heat in the oven cavity with the lowest possible heat of the platinum wire. In other words, step by step, I have reduced the necessary heat of the platinum wire. It is evident that since porcelain is fused by heat radiated from the wire, the wire must always be a little hotter than the porcelain, but by perfecting every available point which will be of advantage, I have succeeded in lowering the necessary heat of the wire to a point which the platinum wire will withstand for hundreds and perhaps thousands of heatings. Prof. Haskell used such an oven for two years without a single burn-out, and Dr. Thomas used a hundred ounces of Close material without a burnout, a conservative estimate of which would be that each oven was heated from 800 to 1200 times.

The first improvement consisted in conforming the oven cavity more closely to the shape of a set of teeth and in making every inch of the cavity walls heat producing surfaces except the two small openings. Every wire that can be introduced to radiate heat decreases the required temperature of the others and the closer the wires can be arranged without touching laterally, the better. Hence by making every inch of the inner surface a heat producing surface with no open ends the highest efficiency is secured as well as an even fuse to the porcelain case.

The second improvement consisted in bringing the wires to the surface of the clay, placing them just deep enough to be caught. By this arrangement nothing intervenes between the wire and the object heated, so that the wire is not heated as hot as previously. Exactly proportionate to the distance of the wire from the porcelain and to the thickness of an intervening wall if any, the temperature of the wire has to be raised above the porcelain treated.

*Abstract of paper read before the National Dental Association, Omaha, Sept., 1898.

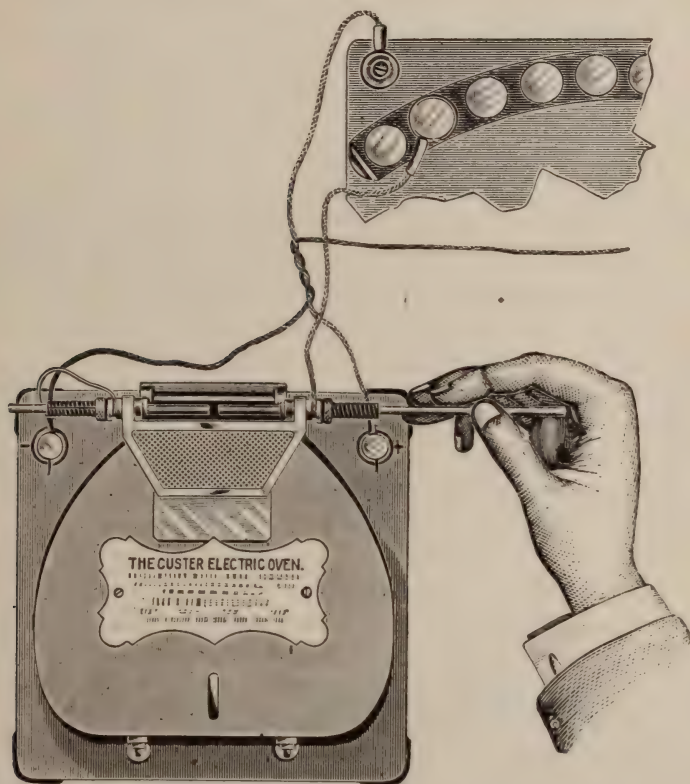
The third improvement was in the manner of arranging the wires. It may seem strange that an oven not spherical in shape would become hotter in the centre even if the wires were placed the same distance apart all over the surface! But it is true and this condition was met by beginning at the centre and arranging the wires closer together as the distance from the centre increased. By this arrangement the whole inner surface of the oven cavity is the same heat. This was an important step and I am gratified to see it is being copied in a late electric culinary utensil.

The fourth improvement was one which was arrived at only after the working of over a hundred ovens. It was not generally known, if at all, that the negative end of a wire heated by a constant electric current becomes about one-fifth hotter than the positive end, and I am yet without positive information and no one of whom I have enquired has been able to give a satisfactory explanation. This does not become apparent in a wire heated in the air, but in the electric oven is present, and it accounts for the trouble that has arisen at the negative end. I found that it was always the negative end that gave the trouble and I found it to be due to the overheating of the wire at this terminal, and when I wound an oven with the negative end of the wire larger than the positive end I overcame the last and most perplexing problem of the oven, which may now be said to be perfect in every detail under intelligent use.

I wish to bring to your notice two appliances for determining the heat of the oven. One is by the means of the thermometer and the other by the use of a small arc light. The thermometer is a modification of one first used by Dr. J. R. Callahan of Cincinnati and the arc is my own.

Dr. Callahan uses a high reading thermometer by placing the bulb of it in a clay stopper moulded to fit the upper opening. This quite accurately measures the heat in the oven. For my own use I secured a high reading thermometer called a pastry thermometer. This is about six inches long and reads to 809F. Instead of placing the bulb of this in the clay stopper I use a 20 gauge platinum wire, allowing one end to enter the oven cavity three-eighths of an inch and the other end to terminate outside in a cup large enough to enclose the bulb of the thermometer. This runs straight through the stopper, which holds it in place. By using the wire the heat is conducted from the oven cavity more

accurately than by the clay stopper and the heat of the cup end while not as hot as the one in the oven is always exactly proportionate to the heat in the oven, and a scale having once been made can always be depended upon thereafter. If it is desired to be accurate to a hair's breadth in the fuse, it can be done by



using a pellet of gold which can be seen to melt as the basis of calculation. When the gold melts it is only necessary to turn off the current when the mercury reaches six points above the gold for Close body, or four and one-half points for Close gum.

By the use of the thermometer as above described it is possible to fuse porcelain to any pre-determined degree with perfect accuracy and it is so easily done that the operator will find pleasure in doing it as he can with perfect assurance relegate this important operation to his assistant. Compare this for one moment with the uncertainty and guess-work of coke and gas

furnaces and you can in a measure realize what has been accomplished.

If the operator does not care to employ a mechanical method like the thermometer for determining the heat and desires one over which he can have complete control, the arc light which I will now describe will be a revelation to the old porcelain worker. By means of a little frame work placed on the top of the oven a small carbon is held opposite the upper opening and another carbon is held in a guide. The second carbon is movable. When the operator desires to see the porcelain melting the movable carbon is pushed towards the fixed carbon till the two are in contact. The movable carbon is then withdrawn a short distance and a brilliant arc will be struck which makes such a strong light in the oven that the operator viewing the case from the front opening sees the porcelain melt, as distinctly as if it were in the open air. He has absolute control over the case and he knows to a certainty just to what degree the porcelain is fused.

With this there is no guess-work and the eye is relieved of the great strain of trying to make out an indistinct object. I cannot too strongly call to your attention this little device almost as marvelous as the oven itself which supplies a want as old as porcelain work in dentistry.

DISCUSSION.

In the discussion of Dr. Custer's paper, DR. H. A. SMITH asked if any method had been devised by which platinum scraps can be melted by means of the electric current, leaving the platinum equal to the original?

DR. CUSTER replied that when platinum is fused in the presence of carbon, so much carbon is taken up that the result may be compared to the conversion of iron into steel, giving a metal having the qualities of platino iridium. If, however, it is desired that the platinum shall retain its softness it is only necessary that it be melted in the presence of lime, when it will be as soft and ductile as the new platinum which you buy.

DR. TILESTON inquired whether the arc light illumination of the oven by Dr. Custer's method is superior to that employed for the Downie furnace?

DR. CUSTER replied that it differed as much as the arc light differs from an incandescent light.

DR. MOLYNEAUX spoke of the great importance of being able to recognize, with exactness, the fusing point of porcelain. As we acquire more accurate methods, and less guess-work, more porcelain work will be done, and better results will be obtained.

ALL SORTS.

Treatment of Pyorrhea Alveolaris.

In an article in the *Dental Century* Dr. T. E. DAUGHERTY says that after thorough scaling of all deposits about the tooth roots he has good results from the use of the following:

R Carbolic acid, 1.
Oil cloves, 1.
Beachwood creosotum, 1.

This I use with the abscess syringe and pump it down in the pockets. You will always feel sure when you treat your cases this way that you have reached the bottom of your pockets.

In treating these cases I usually give from one to two treatments a week, and I am of the opinion that if your work is done as it should be you won't lose but few cases. But don't lose sight of the one fact that cleanliness is next to godliness. So keep on with your good work and success will be your reward.

One Feature of the Pyorrhea Question.

Dr. C. N. Johnson contributes an article to the *Dental Century*, in which he gives some excellent advice. We reproduce the article entire.

"There is one feature of this pyorrhea question which would seem to call for renewed emphasis in any extended consideration of the subject. It relates to the duty that every practitioner owes to the patients who come under his care. Dentists have been derelict in the treatment of this disease more than any other, and the impression seems so implanted in the minds of the profession that pyorrhea is incurable that it has grown to be a common practice with many practitioners to avoid any attempt at treatment. The patient is simply informed that nothing can be done for the trouble and that it is only a question of time when teeth so affected must be lost. Under such advice from their dentist patients are inclined to neglect their teeth when any symptom of diseased gums

appears, and abandon themselves to what they are led to believe is the inevitable.

This is all wrong. No dentist is doing his duty to his patient without giving that patient the benefit of his very highest skill in any complication that may arise. To say that all diseased conditions of the gums and peridental membranes which have been paraded under the name of pyorrhea are incurable is to utter the sheerest fallacy. It is true that many teeth are lost through these diseases. It is also true that with our present knowledge there are some cases which seem beyond our power to control. But that the vast majority of cases which are called pyorrhea may be ameliorated by treatment there is no longer any doubt, and it may also be said that there is no case however bad that cannot be sufficiently relieved to justify the operator in making the attempt.

Not that he should tell the patient that he can cure the disease. Some of these cases which seem very simple prove exceedingly stubborn and there are many discouragements along the line of pyorrhea treatment. On the other hand there are many surprises in the way of beneficial results in cases seemingly hopeless, and many in which it is not too much to say that a permanent and radical cure has been made. It is demoralizing in every way for dentists to go on dismissing patients on the slightest indications of pyorrhea with the idea that nothing can be done. Something can be done, and in many instances a very great deal can be done. In almost every case the serviceability of the teeth may be prolonged for years and they may be made vastly more comfortable while they do remain as the result of proper treatment.

Let us be honest with our patients. Let us tell them frankly that we do not know the ultimate result of our treatment, but let us show them that we are at least willing to do what we can for them. If it so happens that we are not well informed on the subject of pyorrhea and have had no success in its treatment, let us then be frank enough to send the patient to some fellow practitioner who has.

There is a prevalence of diseased gums in this country to-day that is inexcusable in the light of demonstrated knowledge on the subject. Given an average case of turgid swollen gums, purplish in color and exuding pus on pressure, with evidence of a line of deposit under the free margin of the gum, but with little loosening of the teeth and no very deep pockets, and such cases are largely amenable to treatment.

It is claimed that this cannot strictly be called pyorrhea, then the claim is made that it is often these very cases which are neglected and pronounced incurable by dentists.

Dentists have failed to arise to the requirements of the case more in the management of pyorrhea than in any other line of work, and it is

surely time that they began to demonstrate the fact that they have the best interests of the patients at heart in this as in other affections. If failures occur it should not deter them from doing the best they can with the next cases which apply. Failures often occur in fillings and in artificial dentures, and if these were allowed to discourage dentists against other attempts in the same class of work the profession would soon appear helpless.

It is saying very little for us as a profession to acknowledge ourselves beaten to a standstill by a disease so long under observation, and so generally prevalent as pyorrhea."

Lancing Abscess.

When a young patient calls with the first molar dead in the inferior jaw, the face badly swollen and an abscess about to make an external opening, which would leave a scar that would mortify both patient and yourself, don't extract the tooth, in your eagerness to prevent the fistula. Insert a small bistoury along the external surface of the bone opposite the affected tooth and in the direction of the anticipated opening, not fearing to cut too deep. The abscess will open in the incision made, swelling and pain will soon subside and the tooth may be saved, were it possible to save the tooth before the abscess formed.—DR. WEAVER, in *Dental Weekly*.

Abscess Upon Teeth with Living Pulp.

At the Union Meeting in Baltimore, Dr. E. C. Kirk, read an interesting and instructive paper on this subject, a portion of which, taken from the *Cosmos*, we here append:

"Certain features clearly differentiate this form of abscess from dento-alveolar caused by infection of the pericementum via the pulp-canal. First, it is found upon teeth with vital pulps. Second, its location may be in any portion of the pericementum, while in the usual form the seat of infection is almost invariably the apical region. Third, it is a disease found only in patients who have reached adult life. The ordinary form of dento-alveolar abscess may be found in patients of all ages. Fourth, it is almost invariably found associated with teeth of hypercalci-fied structure,—i. e., those of flinty hardness and in which the tubular structure of the dentin has undergone that nutritive change which tends to make them translucent. Ordinary dento-alveolar abscess is found in teeth of all grades of structure. Fifth, abscess upon teeth

with vital pulps is found in mouths generally free from caries, and is in no degree dependent upon caries as a cause. Ordinary dento-alveolar abscess is usually found in mouths where caries is active, and the abscess is usually dependent upon caries as a predisposing cause.

It will be seen then that we have to deal with a localized necrotic inflammatory process, in which the cause of the inflammation must be sought for in directions other than those which give rise to infective inflammation through the pulp-canal.

The pathological phenomena involved in abscess of the apical region caused by infection via the pulp-canal are so clearly made out that no one to-day has any reasonable doubt that the process is exclusively the result of bacterial infection. . . .

When we endeavor to explain the etiology of abscess the pericementum of vital teeth as a result of infection by bacteria, the relation of cause and effect is less obvious because the possibility of access of bacteria or their ptomaines via the pulp-canal is eliminated as a factor, and the modus of the infection must be sought elsewhere. There being no break in the continuity of the gingival attachment in the cases under consideration, we naturally consider the vascular circulation of the tissue as the most probable means of entrance for the irritant which is the exciter of the inflammation in question. That pathogenic bacteria may exist in the blood-stream and, meeting a *locus minoris resistentia* in a tissue, may set up an inflammatory process at that point is a well-established pathological fact, and it is not at all impossible that the immediate cause of pericemental abscess may be accounted for in that way. There is, however, the question of a predisposing cause, which in these cases is of vastly more importance, and which when clearly made out will enable us to cope rationally with a group of dental pathological conditions which have been the *bêtes noires* of dental practice since its genesis as a calling.

Broadly considered, any inflammatory action is a disturbance of the normal processes of nutrition, and this is true of both general and local inflammations, the disturbance being proportioned to the intensity of the irritative action. Where bacteria and their products are the excitants of inflammation, their effective invasion is conditional upon the vital status of the tissue concerned. If the vital resistance of the tissue is sufficiently high it becomes immune, and bacterial invasion is impossible. The vital potential of a tissue is the result of the sum total of its nutritive processes normally formed. Any interference with the normal nutritive process therefore results in a diminution of the vital potential of a tissue, and renders it liable to invasion by bacteria with consequent inflammatory reaction. A disturbance of normal nutrition resulting in lowered vital resistance is therefore a precedent condition to effective bacterial invasion.

The nutritive disturbances which predispose to the particular inflammatory action under consideration are, in the opinion of the writer, those arising from auto-intoxication, which has two sources of origin,—viz, by toxic substances produced by the human organism as side products of its own nutritive processes, and second by the waste products of saprophytic bacteria acting within the digestive tract, particularly the intestinal canal.

It has been already noted as a general biological law that all micro-organisms perish in an excess of their own waste products, and the same law is equally applicable to macro-organisms, including the human being. It has been stated upon good authority that man produces within his body sufficient poison in six hours to kill him if it were not continually eliminated. These toxic substances under circumstances which interfere with their complete elimination are absorbed through the lymph-tracts, and, finding their way into the general circulation, ultimately exert their irritant effect upon all of the tissues of the body, the tissues reacting in various degrees in proportion to their relative powers of resistance and the amount of irritation to which they are severally subjected.

Toxins produced within the digestive tract by the action of saprophytic bacteria are absorbed and added to the sum total of poisonous material in the blood-stream, modifying its toxic effect in proportion to their amount and virulence.

The continual irritation produced as described reacts eventually upon the general nutritive processes of the body, and by establishing a so-called "vicious circle" brings about a permanent alteration of the nutritive processes which, when it has become chronic, we term a diathesis.

The establishment of a diathetic condition in which toxins are habitually produced and retained in the blood-stream and tissues marks the culmination of a graded series of nutritive changes, during which the production of toxins has gradually progressed with consequent increasing irritative effect upon the tissues. The effect of the prolonged irritation brings about permanent structural changes in certain tissues, and reduces their standard of vital resistance to a point where they become extremely liable to necrotic inflammatory attacks from relatively slight sources of additional irritation.

For reasons not altogether clear the articular tissues appear to be particularly vulnerable to the irritative action here noted, and in their category we include the pericemental membrane.

The clinical phenomena manifested by a vital tooth, the pericementum of which is the seat of abscess, are of interest when viewed in the light of the foregoing presentation of the toxemic character of the irritant. It has been already noted that teeth so affected almost invariably show

evidences of hypercalcification of the dentin. They are hard, dense teeth, semi-translucent, and usually free from caries. Evidently the functional activity of the odontoblastic layer of pulp-cells has been unduly stimulated throughout a considerable period of time by an irritant which has been of the right degree of intensity to induce a functional activity beyond the normal point, and that activity of function has resulted in the dense calcification of the dentin noted. It is also evident that the functional hyperactivity has been induced through the vascular supply to the odontoblasts as the only conceivable channel through which it could be expressed.

It is reasonable to assume that a corresponding excessive functional activity has been manifested in the histological elements of the pericemental membrane. Indeed, it is not uncommon to find evidences of hypercementosis upon the roots of these densely calcified teeth.

The theory has been advanced that the acute inflammatory outbreaks in the pericementum observed in these cases are caused by the over-calcification of the dentin cutting off its nutrition and causing the tooth as a whole to act as an irritant foreign body, thus giving rise to acute inflammatory reactions of its investing membrane. It must be evident that destruction of the nutritive supply to the dentin by over-calcification cannot, *per se*, cause the tooth to act *en masse* as an irritant foreign body any more than would destruction of the nutritive supply to the dentin by any other means,—pulp extirpation for example.

It seems more rational to attribute the diseased condition of the pericementum to the same causes which induced excessive calcification of the dentin by over-stimulation of the odontoblasts of the pulp,—viz, the action of toxic irritants in its vascular supply. It now remains to consider the nature and seat of the inflammation in these cases.

It is a fixed law of pathology that pus from an abscess tends to find its exit upon the surface, and that in so doing it follows the line of least resistance. Whether a pericemental abscess shall find its exit upon the gum-surface or at the gingival margin is practically determined by its location on the root, which in turn determines the line of least resistance. And again, whether it discharges upon the surface of the gum or at the gingival margin determines the name by which the inflammatory process shall be designated. If it should find exit upon the gum-surface it has been called with entire justification "pericemental abscess," but should exit of the pus occur at the gingival margin then we have a pus-pocket established, which shows no tendency to heal spontaneously and by infection from the bacteria of the oral fluids becomes a chronic suppurating surface, and is, in other words, pyorrhea alveolaris. The writer hopes it will be clearly understood that the etiological explanation of pyorrhea

alveolaris here given is intended to be applied only to the special form of the disease here described, and is not offered as a solution of the causation of the whole group of disorders characterized by a flow of pus from the alveoli.

The diathetic factor in this disorder and the anatomical character of the tissue which is the seat of the lesion, taken together, present certain points for consideration which are interesting as furnishing a rational basis of classification of this disease with other allied arthritic disorders. Anatomists tell us that the union of a tooth to its socket is a joint of the order gomphosis, an immovable articulation, nevertheless containing the tissues common to joints in general and in such order and arrangement as are best adapted to the peculiar nature of their function. It has been called an immovable joint, but this is only relatively true, as such slight motion as is possible by virtue of the elasticity of the pericemental membrane is normal to the dento-alveolar articulation and necessary to the proper exercise of the masticating function of the tooth.

Besides the pericemental membrane or ligament of this articulation, Dr. G. V. Black in his classic study of "The Periosteum and Peridental Membrane" describes certain ectodermic glandular structures situated in the pericementum, lobulated in form and filled with lymphoid cells, which he calls lymphatic glands. In the same work he states that these glands are the seat of phagedenic pericementitis. While he describes most minutely the histological structure of these glands and designates them as lymphatic, he offers no suggestion as to their significance other than that implied by his designation. His reasons for the statement that they are the seat of pyorrhea alveolaris are based upon microscopic observation, a view of which recent investigation by the writer tends to confirm.

The presence of these glandular structures in the pericementum is possibly explainable on grounds other than that they function as lymph-glands. Bearing in mind that the dento-alveolar articulation is anatomically a joint, should we not then expect to find represented in it those tissues which are commonly found in joints in general, and among them those tissue elements which enter into the structure of synovial bursæ? It is true that articular bursæ are found only in the structures of movable joints, but the dento-alveolar articulation is not absolutely an immovable joint, and it would seem not at all impossible that the lymphatic glands of Black represent the effort of nature to supply so much of synovial tissue as the limited mobility of the dento-alveolar articulation would functionally warrant.

The recognized biological tendency to work in harmony with a definite plan would give additional force to the idea that the development

of synovial tissue in that position is an attempt to co-ordinate the dento-alveolar articulation with the other articulations of the body.

In this connection, with such a view it is interesting to note that Black has found the glandular formations of the pericemental membrane to be more abundant in the omnivora than in the carnivora,—i. e., in that order of tooth doing relatively the larger amount of work,—and that they were more highly developed in that portion of the membrane nearest the gingival attachment in that specialized bundle of fibers which has been termed the *ligamentum dentis*, and therefore at the area of greatest mobility.

The close similarity of histological structure as between lymph-glands and synovial tissue and their common embryonal origin could, under the circumstances noted, readily give rise to a misapprehension regarding the function and significance of the pericemental glands. The exact nature of these glands is a matter of importance in connection with the present study, for should it be determined that they are synovial in character and admittedly the seat of phagedenic pericementitis and therefore of pericemental abscess, the relation of these inflammatory disorders to the arthritic diathesis becomes clear.

That pericemental abscess is a trophic abscess of the dento-alveolar articulation is the view accepted by the writer hereof, and that so-called gouty pyorrhea and pericemental abscess are but the local expressions of a disorder having a common constitutional origin and differing in clinical expression merely by the accident of position is also accepted. Both conditions may be found upon the same tooth, and both are amenable to a constitutional treatment which will successfully eliminate toxins from the blood and improve nutrition. Local treatment is simply palliative, and success can only be hoped for where both local and constitutional measures are conjointly applied."

Parallel Teeth for Bridge-Work.

The anterior teeth are of course much less trouble and the irregularity can be corrected by anyone. There can now be no excuse for anyone inserting a bridge on anterior teeth that are not parallel, and when the first case is completed you will congratulate yourself on the artistic effect, as well as on the more accurate fit and consequent longevity and usefulness of the case. This will stimulate you to undertake putting posterior piers in proper position. Do not attempt the most difficult at first, and failing, condemn the theory, but remember the adage, "*Nulla excellentia sine labore*," and with it full determination to conscientiously accomplish this work, pursue it intelligently and patiently. As a well-earned

reward you will soon have the supreme satisfaction of seeing in your own office a beautiful piece of bridge-work, not only artistically and properly constructed, but one which will slip into place on these parallel piers without changing shape in the least, leaving the completed case fitting as accurately as did the bands when the impression was taken.—F. F. FLETCHER, in *Dental Digest*.

How Would You Make an Exact Duplicate of a Full Denture in the Absence of the Patient?

In his interesting report to the New York Society, Dr. R. Ottolengui, correspondent, gave replies to the above query, that he had requested from various college men. From the *Cosmos* we extract as follows:

Dr. Ellison Hillyer, of the New York College of Dentistry, says:

1. Cleanse thoroughly.
2. Cast the model upon the palatal portion of the plate, not necessarily extending posterior to the condyles,—(coiling the plate is unnecessary).
3. In order to duplicate the "fullness" of the lateral portions and the mold and size of the teeth, cast two sections of plaster extending from condyle to median line, and from median line to opposite condyle, and from the base of the model to the cutting-edge of the teeth. (When plaster comes in contact with plaster, Oliver's separating fluid,—or other,—may be used).
4. In order to duplicate the exact thickness of the denture, cast the lingual portion, extending from condyle to condyle and covering the lingual surface to the edge of the cast, labial sections extending thus over the cutting-edges of the teeth.

With these four parts "set" and removed, the teeth may be selected to fit the labial molds,—proper shade,—and ground exactly to fit: then set up and waxed upon the model,—the labial molds being in position relative to the model,—the thickness of the wax determined by the lingual cast in its proper relative position. When vulcanized and finished, an exact duplicate should result.

Dr. Wilbur F. Litch, of the Pennsylvania College of Dental Surgery, says that to make an *exact* duplicate of a full denture, either with or without the patient, would be practically impossible. To produce an approximately exact duplicate in the absence of the patient, run plaster into the plate to make a new cast. If there should be so much undercut that the cast cannot be separated from the plate without breaking, run the cast in sections, then to be firmly joined together for working purposes.

Placing upon the cast thus obtained the denture to be reproduced, run outside of it and the cast a plaster matrix in two or more sections to serve as guides for fullness and contour, length and position of the teeth.

Make the "bite" of a fusible alloy melting at about the temperature of boiling water; this can be run upon the grinding and cutting-edges of the teeth without danger of fracturing them, and, mounted in a suitable articulating frame,—Bonwill's preferably,—can then be used for mounting the teeth as would the ordinary plaster bite, with the advantage that it cannot readily be broken, and will not rapidly wear away in the prolonged grinding which would be required to procure an exact reproduction of the grinding and incisive edges of the denture to be duplicated. Teeth made in the same molds as the originals would probably be necessary.

Dr. Robert H. Nones, of the Medico-Chirurgical College of Philadelphia, maintains that it is not possible to make an *exact* duplicate of a denture, from the fact that the contraction and expansion of materials used in cast, die, and plate all operate to make slight changes; however, assuming that it is a denture mounted upon vulcanite to be duplicated:

1. Wash and scrub the plate with dilute ammonia water to free it from grease and other foreign material.

2. Slightly, very slightly, oil all of the surfaces of plate and teeth with olive oil.

3. Pour a cast in the palatal portion of the plate one-half inch thick, or more, and have it project beyond the edges of the plate all around. Smooth this cast and varnish its outer walls, in which three or more conical depressions are made above the plate-rim edges.

Remove plate from cast and set it back. Form a plaster wall over one-quarter inch thick about the outer sides of dentures and outer wall of cast. Place cast and all in an articulator, and run a plaster mold over plate and occlusal surfaces of teeth. Lock the articulator jaws firmly. When the plaster is hard, separate jaws of articulator, pry off the outer plaster walls. Select a set of teeth exactly like the others, and set them in the outer plaster walls. Make a base-plate of wax, put walls and teeth in position, and press softened wax beneath teeth until they are firmly held. Add more wax, faintly oil the plaster mold of the occlusal edges, and press the articulator jaws in position. See that each tooth fits exactly into the two plaster guides. Next, finish waxing, invest, pack, vulcanize, and finish. The inevitable shrinking of the vulcanite will make the second plate slightly different from the first plate.

Dr. George H. Wilson, of the Western Reserve University, Cleveland, Ohio, says that after giving the plate and teeth a thin coat of oil, fill, making the plaster cast. With the plate upon the cast, attach to one

jaw of the articulator; set the other jaw of the articulator about one-fourth inch from the teeth; mix plaster stiff enough to stand without flowing, spread upon the occlusal and incisive ends of the teeth, overlapping the buccal, labial, and lingual surfaces about one-sixteenth of an inch; place the articulator jaw in position and unite with plaster. When the plaster has hardened, open the articulator and remove the denture; place base-plate wax upon the cast, with a roll of wax upon the alveolar ridge; set duplicate teeth in imprints of tooth upon opposite jaw of articulator; close articulator, forcing the cervical ends of the teeth into the wax roll; with hot spatula unite teeth and wax roll to base-plate. After cooling the wax, trim the plaster away from the buccal and labial surfaces of the teeth; open the articulator and build the wax plate to contour. Now remove the lingual portion of the plaster imprint of the bicusps and molars; close the articulator, proving the articulation. Now the case will receive the ordinary manipulations.

If the case is a metal denture, it will be necessary to make two casts, one to be used as a model in producing the die.

Dr. R. R. Freeman, of Vanderbilt University, gets accurate casts from upper and lower plates. With plates on casts, occlude and adjust according to the Bonwill rule, on a Bonwill articulator. Remove plates, run additional casts sufficiently thick and slightly expanded at base for countersinks; place each on level plane, plates on casts. Invest teeth in plaster, two sections, extending from plane up over teeth, dividing at median line. Having soaped, your plaster will separate readily where desired.

Separate sections, remove plates, adjust base-plate of wax on cast, and replace sections. If you have duplicate teeth, they may be readily adjusted to position in tooth impressions left in sections; otherwise make best selections you can and wax up. Remove these wax plates with teeth arranged to the casts in articulator for more accurate occlusion.

Return to your duplicate casts, wax to a finish, trim casts, flask, etc.; after vulcanizing and finishing up plates, to be certain beyond question that your occlusion is same as original plates, take casts from duplicate plates; on these casts adjust wax plates, transfer to original casts in articulator, build up to right length, fasten wax plates together, and in these place casts, and adjust by Bonwill rule in Bonwill articulator.

Remove the wax base-plates, substitute the duplicate plates, and do such grinding as may be necessary to perfect occlusion, and you will have an exact duplicate of your full denture.

A Plea for More Art in Artificial Teeth.

Dr. J. T. MASON thought the routine of the workroom was unfair to have cases left to an assistant who did everything by "rule-of-thumb," and the assistant, in most cases, not having seen the patient; and much less would he see the effect of his work when placed in the mouth. The impression taken was handed over to him by the dental surgeon, and no more notice was taken of it afterwards until it was inserted in the mouth. If that were not so, how were the monstrosities which we come across from time to time accounted for? Very many failures, he thought, in the application of artificial teeth, were caused by the dentist thinking more of rendering the work as easy for himself as possible, and not sufficiently studying in what way he could realize and restore the face to its original lines, after allowing for alteration caused by age. It was necessary to form in the mind's eye an ideal restoration of the face before the work was begun, and then every endeavor should be made to realize it. In eduntulous cases he had found the greatest help in obtaining a photograph or other portrait of the patient before the loss of the teeth, and making his work reproduce the expression there portrayed. Frequent reference to the mouth at different stages of the work was necessary to see the effect, for the dental surgeon could no more do without that than the artist or sculptor could produce a satisfactory likeness from one or two sittings. When the lower jaw was set up satisfactorily, the all-important "bite" must be taken to permanently settle the length of the face.—*Dental Record*.

A Simple Saliva Ejector.

Dr. J. H. SANDERS gives the following in the *Journal British Dental Association*:

"The saliva ejector has become such a necessity in the everyday life of the dentist that no operating room can be considered properly equipped without one. The instrument described below makes no claim to elaborate appearance, but it can be depended on to do its work, and has the merit of being both easy and cheap to construct.

"In its simplest form it can be easily made in about one hour by any one who can soft-solder, and I think the following particulars will make its construction clear.

"The ejector is best made from brass tubing, and for this purpose fishing-rod ferrules are admirably suited. These may be obtained in all sizes and at a small cost at any fishing-tackle maker.

"The body tube is about $3\frac{1}{2}$ inches long and $\frac{3}{4}$ inch in diameter, on

the back of which is soldered a plate of brass for the purpose of screwing the ejector to the wall. A short length of tube is also soldered at a convenient point for attaching the suction tube.

"The corks used for closing the ends of the main tube must be specially selected for their soundness, and may with advantage be dipped in melted wax before using. Two lengths of smaller brass tubing, about $\frac{1}{4}$ or $\frac{5}{16}$ inch, are taken to form the tubes. The upper tube terminates in the point, which has a fine aperture to allow a jet of water to pass. Possessors of a turning lathe will, of course, turn this up, but if one is not available, proceed as follows:—A series of cuts are made with a fine saw at the end of the tube, and triangular pieces removed; the remaining pieces are then bent together until they form a point. Soft solder is then run into the cuts, and the small hole drilled with a fine drill in the engine.

"This hole must be quite smooth, and about $\frac{1}{30}$ inch in diameter, and must be so drilled that the jet is thrown in the direction of the axis of the tube. If the ejector is to be attached to the water supply by rubber tubing, it will be well to solder a ring of wire at the top of the tube to prevent its being blown off by the water pressure. This finishes the upper tube.

"The lower tube has a short length of small brass tube soldered into its upper end to form the throat; it should be about four times the diameter of the jet aperture, and about $\frac{3}{4}$ inch long. It must be soldered centrally into the larger tube, which may be adapted to receive it in the same manner as the jet was formed.

"Two or more holes of about $\frac{1}{16}$ inch diameter are drilled in the throat at $\frac{1}{2}$ inch below its upper edge, to permit the air and water to be drawn from the body of the ejector. Before putting the parts together there remains the bucket to be made. For this take a short piece of tube about $\frac{3}{4}$ inch in diameter and 1 inch long, and close one end by soldering in a disc of brass. Two narrow strips of brass are then soldered to the other end, and these having been bent to the proper curve, are again soldered to a short piece of split tube which will just slide over the end of the tube.

"The parts may now be put together. First, the holes must be bored in the corks to take the tubes, for which purpose a cork-borer should be used if one is at hand. If not, however, the holes may be made by taking a piece of the same as tubes are made from, and having sharpened one end with a smooth file, slowly pushing it through the cork with a twisting motion. The corks are now tightly inserted into the main tube, and the tubes pushed through until the jet fits into the throat; this insures the jet being central with the throat, and gives steadiness to the tubes. The bucket is pushed on the end of larger tube until the tube

nearly touches its bottom, and the ejector is ready for use. It will work best on a high pressure water supply, but will also do its work well if supplied from a cistern, provided a fall of four or five feet can be obtained.

"The following conditions are necessary for successful working :

"(1). All joints must be tight.

"(2). The jet of water must pass through the throat without touching its walls.

"(3). The end of the tube (lower tube) must be under water when working."

A New Factor in Erosion.

Sections show under a very high magnification ($\times 750$ diam.) a phenomenon that has never been observed, so far as I am aware, and which throws some light upon the pathology of the form of tooth-wasting which is called erosion. In both sections an unquestionable interglobular space is shown; the calcospherites are extremely minute, but they are calcospherites, and they exist in human enamel. As yet no one has ever shown interglobular spaces in human enamel, although no doubt every student of Rainey and Ord who accepts their theories of calcification must suppose that imperfect enamel should contain these appearances.

Neither section was submitted to any reagent in the course of preparation, both were simply ground thin between two slabs of glass and mounted without any stain.

The patients from whom the specimens were obtained were both victims of very extreme and very typical erosion. The shiny grooves, sometimes with sharp edges, ran all over the surfaces of most of the teeth. Here and there caries might be seen running its own course, and in some sections I have stained the micro-organisms with methyl-violet to show the two forms of destruction in marked contrast.

I have never found these spaces except in enamel which was subject to erosion. I have generally found it scattered through the whole of enamel which was so affected.—A. S. UNDERWOOD, *Jour. Brit. Dental Asso.*

Backing a Porcelain Face.

If the bite be close it can be obviated by grinding to a point, leaving almost a feather edge without showing any gold whatever; then grind from the point, leaving the tooth—side view—something in the shape of a diamond. With a piece of 36 gauge, 24 K. gold, make backing. This can be thoroughly adapted to the teeth. Trim the backing and carry it

a little over the edge of the tooth at the right angles. After properly adjusting the backing, remove it carefully and lay it on a piece of asbestos or charcoal, and flow 22 K. solder over it down to the pins, thickening to the required degree, and the work is done. Replace upon the tooth, and secure in place by splitting the pins, and flow solder again, beginning with 22 K., and continue with 20 K. to any thickness desired, or use 22 K. throughout. To keep the porcelain from cracking, be sure to keep the borax from touching it. The investment should cover all surfaces except between the pins and cap below.—H. H. JOHNSON, *Dental Weekly*.

A Method of Vulcanizing.

In polishing vulcanite Dr. Hinman usually begins with very fine sand-paper, following this with pumice-stone and prepared chalk, applied with brush wheels, felt-cones and felt-wheels. He does very little file work. After waxing and carving, he applies chloroform to the wax with a small wad of cotton, making a very smooth surface. When this has dried it is followed with a coating of sandarac varnish. This is done either in the case of plain or gum-section teeth. When the case is invested this varnished surface makes a very hard and smooth appearance. When the wax has been washed out, silex diluted with about two-thirds the quantity of water is applied, and almost immediately rinsed out with water.—*Amer. Dental Weekly*.

Vulcanizing on Silver.

The use of silver as a base-plate material is very limited, especially as a base with rubber attachments. The principal objection to its employment is generally imputed to the fact that it tarnishes in the mouth. But I think we can reasonably infer that in those cases where rubber attachments are to be made, the real and only objection lies in the difficulty of vulcanizing rubber in contact with silver. There are two ways of accomplishing this in common practice. The first is by thinning the silver base where the rubber is to be attached. This necessitates the sending of the silver to the tinsmith to be tinned. The second method is by introducing tin-foil between the silver base and the rubber. The rubber will vulcanize on the tin-foil perfectly, but I have never been able to discover either a chemical or a mechanical union between the rubber and the silver, although it is claimed that there is such an union. The explanation of this phenomenon is that silver has an intense affinity for sulfur, and also for all the known vulcanizing agents, such as chlorin, iodine, bromine, etc.;

so that instead of the sulfur forming a chemical combination with the rubber it combines with the silver, forming a metallic sulfid. To overcome this we must interpose some non-affinitive substance between the silver and the rubber before we can vulcanize the latter, or if we do interpose an affinitive substance between the rubber and the silver, its affinity must be confined to the silver alone. According to the latter theory, it seemed to me that we should not be limited to the employment of tin or tin-foil for this purpose, and so I tried gold-foil. This proved successful, but there appeared to be no definite union. The next trial was with a silver plate coated with mercury. The rubber vulcanized upon this thoroughly, but on separating it from the silver the amalgamated surface of the silver appeared to be somewhat oxidized, though not to an objectionable extent. The third experiment was on a silver plate coated with mercury and covered with gold-foil, to absorb some of the mercury. The results were entirely satisfactory, and the materials are such as are available in every dental office. I think it quite possible that other affinitive agents, such as metallic chlorids, could be employed for the same purpose, but have not tried them.—D. WEST, in *Cosmos*.

BRIEFS.

Pack Vulcanite Warm and Wet, it packs clean as well as easy.
—*Dental Weekly*.

Sharpened Chisels Dipped in Oil trim vulcanite as easy as cutting soft chocolate.—*Weekly*.

Plates Made too Thick are so rigid that they will crack and break more easily than thinner plates.

Vulcanize Rubber Between Metal Plates, says Dr. S. A. Coxon, and they will stand a greater breaking strain than where vulcanized between plaster.

Impression Material from which a Die may be Cast Straight.—Plaster, 1 qt.; pumice stone, powdered, 1 pt.; chalk, 1 pt. Mix and use same as plaster.—*Dental Weekly*.

Square-Edged Excavators Should Never be Used; they will cause discomfort much more intense than is produced by the use of spoon-shaped excavators.—*Dr. Arrington, Dental Weekly*.

If the Edge of a Bur Blade can be seen when held up against a clear light, lay it aside. Send to be re-sharpened when accumulated in sufficient quantity.—*W. E. Walker in Dental Brief.*

Color Impression Plaster.—In mixing for impressions, if a little coloring matter, such as powdered pigment be used, the line of demarkation between the impression and model will be clearly defined.

A Polisher.—Instead of winding cotton on the end of an instrument as a polisher, unwaxed floss silk is better. It is more durable than cotton and it will not turn on the instrument.—*Dental Weekly.*

To Make a Warped Rubber Plate Fit Again: Take a new impression of the mouth, from which make a model. Warm the plate until quite pliable. Press down on model and dip in cold water.—*Amer. Dental Weekly.*

Save Your Eyes—and your patients—by wearing glasses when you need them. Go to an oculist—no one else—and find out if you need them. No man knows the *exact* condition of his own eyes any more than of his own teeth.—*Dental Weekly.*

To Give a Fine Finish to Gold.—After the scratches have been removed with pumice stone, nothing is so effectual as oxide of zinc on a brush wheel. It leaves a beautiful, lustrous polish, and does not soil the hands.—*H. H. Johnson, Dental Weekly.*

Gold Foil as a Cavity Lining.—When I fill an incisor or cuspid that has a thin labial wall with cement or gutta-percha, I always line that wall with four thicknesses of No. 4 gold foil, and it gives the tooth a very nice appearance.—*Dr. Downs, Cosmos.*

Annealing Gold.—You will never appreciate the true working qualities of cohesive gold until you quit passing it in the flame of the lamp. Use a sheet of mica or an annealing tray. Don't be penurious. The good effects will pay for the difference.—*W. H. Weaver in Dental Weekly.*

Reflected Light for the Operating Chair.—Fasten a white shade on spring roller in the usual manner to the top of the window. To reflect the light down on the chair, draw the shade out horizontally by means of a cord passing through a pulley suspended from the ceiling or to the wall at the rear of the chair.—*Dental Weekly.*

To Repair Broken Casts.—Broken plaster teeth or casts can be made stronger at the point mended than at any other by using a rather

stiff solution of shellac upon the fractured surfaces, repeatedly burning it off until it is no longer taken up by the plaster; then heat surfaces and press together. Try this plan and you will use no other.—*Western Dental Journal*.

Forging.—Great care should be taken not to overheat steel, as it destroys the grain and makes it brittle. Small instruments should never be heated to a degree that will raise scales while being worked. In drawing a point, all sides must be hammered alike, otherwise the point is liable to spring in tempering, as the side hammered most will have the finest grain.—*W. H. Steele in Items*.

Never Grind Artificial Teeth with a Dry Stone, if this is done, small pieces are apt to chip out, and small cracks appear at the neck of the tooth where it has been ground. These are not noticeable sometimes, but if the tooth has to be soldered, these cracks often extend and involve fracture of the tooth. It also happens sometimes when the tooth is vulcanized.—*F. Mackenzie, Brit. Journal*.

Caution in Using White Rubber.—In packing white rubber between teeth which are fit on to the natural gum, do not let it come in contact with the pins of the teeth. The white rubber is one of the softest rubbers rubbers, and if vulcanized round the pins, the teeth will be more liable to be forced out than if red or any other hard rubber envelops the pins.—*F. Mackenzie, Brit. Jour.*

To Keep Engine Burs in Good Condition.—Polish with a cotton duck wheel on the lathe, using either pumice-stone or emery flour. In polishing the bur end, keep the blades parallel with the direction the wheel is turning. Little grooves will form in the soft wheel, and all the rust and dirt will be quickly removed, leaving the bur considerably sharpened.—*H. H. Johnson in Amer. Dental Weekly*

A Good Root Filling Material.—I have been using for some months, for root-canal filling, balsamo del deserto dissolved in an alcoholic solution of hydronaphthol. This varnish "runs" readily into fine canals and can be followed with gutta-percha points. It seems to be satisfactory. It is best carried to the canals between the points of a pair of Flagg's dressing pliers.—*L. Van Orden in Dental Weekly*.

Waxing Cases.—In "waxing up" be sure to oil the surface of wax before using blow-pipe or Bunsen flame to give a final finish to the base plate. The oil seems to increase the flowing quality of the heated wax and gives to it a smooth and evenly polished surface. Wax-begrimed teeth, after the "waxing up" process, may be cleaned by rubbing them with a cloth dipped in chloroform.—*Dental Weekly*.

Formaldehyde as a Disinfecter of Instruments.—Dr. E. J. Horton after a series of experiments concludes that infected dental instruments can be disinfected without injury in a closed space of less than one cubic foot, by an exposure of fifteen minutes to the formaldehyde gas generated from a pastil containing five grains of paraform, by heating the pastil over a proper alcohol lamp.—*Extract from Cosmos.*

Cohesive Tin.—I question very much if any material is as desirable and beneficial for the comfortable preservation of the teeth from the age of ten to fifteen as cohesive tin. It is more soothing to sensitive dentine, makes a more perfectly water-tight filling, and can be inserted, condensed and finished in much less time and with less discomfort to patient than any other metal in use.—*B. F. Arrington, Dental Weekly.*

Combination of Rubber-Dam and Napkins.—Dr. Crawford showed how, in many cases, teeth in the upper jaw could be filled without placing the rubber-dam in contact with the parts. He places a piece of dam between two napkins, and carries it to place. This method has additional advantages of reflecting light into the cavity and there is less liability of causing inflammation to the gum margin.—*Amer. Weekly.*

Devitalizing.—To devitalize painlessly with arsenic: Place a small pledget of the devitalizing agent on freshly exposed dentine as far from the exposure as possible, then place on the exposed nerve a pledget of cotton saturated with equal parts of clove oil and carbolic acid, dipped in a few crystals of hydrochlococain. Seal lightly and ninety-five per cent. of cases thus treated will be a success.—*T. P. Hinman, Dental Weekly.*

To Remove Impressions.—It is often difficult to remove the impression of the edentulous upper, or in fact of any case. Ask the patient to cough, and this will raise the soft palate and the air will be admitted between the composition and the palate. The impression may then be readily removed. To remove an impression in a lower case, insert the index fingers one on each side and press the cheeks outwards from within.—*F. Mackenzie, Brit. Jour.*

Pink Rubber Irritates the Mucous Membrane.—In packing vulcanite cases as little of the pink rubber as possible should be allowed to come in contact with the gum. The pink rubber is largely charged with coloring matter, and this irritates the mucous membrane of the mouth. This is especially the case in full lower cases, and all cases ought to be lined if possible, with a thin layer of black, which is the purest rubber.—*F. Mackenzie, Brit. Jour.*

Shock.—As shock has occurred after prolonged operations, it is essential that the dentist should consider the tax upon the nervous system of his patient, and for their welfare refrain from operations the protraction of which, through conditions either permanently established in the make-up of the individual or caused by temporary impressions, might produce this undesirable condition, with all its varying discomforts and consequences.—*S. B. Luckie in International.*

Simple Band Matrix.—Cut a piece of German silver polishing strip long enough to go around the tooth, punch a hole in each end. Get a key-ring, of the kind with abutting ends, file the ends to points to fit the holes in the strip; pass the strip around the tooth, open the ring with clamp forceps, insert the points in the holes in the band, let the ring spring back, which will tighten the band around the tooth and hold it in position.—*Dr. J. F. Steele in Dental Weekly.*

How to Handle an Instrument while Tempering.—In tempering in oil or water, always dip the instrument perpendicularly. If dipped on a slant, it is liable to cause the instrument to spring, especially if the bath is very cold. When tempering light work, the instrument must be handled quickly, for the edge where the best temper is required is the smallest part and cools first, often rendering the temper defective just where it should be most perfect.—*W. H. Steele, Items.*

A Good Method for Keeping the Mouth Dry with the Napkin.—The first thing is to raise the lip and cover Steno's duct with cotton or bibulous paper. Then twist the napkin, begin about the middle of the lip and carry it back to the point desired and secure it in place with an ordinary molar clamp. By closely covering the opening of the principal salivary ducts with cotton or bibulous paper almost any mouth can be kept entirely dry for some time.—*Dr. Hinman, Dental Weekly.*

Cleansing Instruments of Cement.—In an article recently published I suggested a method of detaching a pin cemented to a root or to a pivot crown, by the use of a strong alkali—aqua ammonia—to produce disintegration of the oxyphosphate of zinc. I use the same alkali to clean my spatulas and pluggers after filling with this cement.

Remove what you can otherwise, and then dip the instrument into the aqua ammonia, and afterwards rinse the wipe dry.—*W. B. Mean in Items.*

A Very Simple Apparatus for Sterilizing Instruments, and one which can be used over an ordinary spirit lamp or over a fire, is described in Schimmelbusch's "Aseptic Treatment." It consists of a rectangular tin case, with a cover opening on hinges. The case is 10 or

12 cms. deep, about 15 to 20 cms. broad, and 20 to 40 cms. long, which measurement can, of course, be varied by dentists to suit the sizes of their instruments. Wire baskets are used to facilitate the immersion or removal of the instruments.

To Apply the Rubber-Dam.—In order to get the rubber-dam well up on the neck of the tooth, so as to obtain a clear view of the cervical margin of the cavity about to be filled, wrap a piece of dental floss or gilling thread twice around the tooth, and push this well up on the neck of the tooth, then tie. Let this remain for a couple of days, and when the patient returns, the application of the dam can be made with ease to the operator and with little discomfort to the patient, affording a perfect view of the parts to be operated on. Should there be a large space between the teeth, the interdental space *below the ligature* may be filled with cotton steeped in sandarac varnish, or with pink gutta-percha.
—*T. F. Chupein, Dental Office and Laboratory.*

New Publications.

LEHRBUCH DER CONSERVIRENDEN ZAHNHEILKUNDE. Von W. D. Miller. A. o. Professor an der Universität Berlin. Mit 449 Abbildungen. Zweister umgearbeiteten und erweiterte Auflage—Leipzig. Verlag von Georg Thieme, 1898.

We have before us the second edition of a work which has proven itself to be a mile stone in the progress of dental science in Germany. It is hardly two years ago that the book appeared before the profession, and it seems there was a good need for it as the first edition was so soon exhausted. It would be entirely out of our range to say more than a few words of appreciation of the excellent work of Professor Miller. The arrangement of the text, the profuse and good illustrations, the clear and elegant writing, make it a pleasure to read the book without fatigue. The researches of the writer in the pathology and treatment of the defects of the soft tissues about the teeth are classical and every line points to the scientific scholarship of the author. As a whole, Professor Miller treats the matter from a very conservative standpoint; there is no speculative hypothesis, no dogmatic statement without true foundation to be found in the book, thus increasing its value tenfold for the student and busy practitioner.

Amicus Plato, amicus Socrates, magis amica veritas!

The volume has been greatly improved upon; all the more important inventions and methods of the last two years have been carefully noted, such as cataphoresis, formaldehyde and its various preparations, the new forms of gold, Dr. Jenkins porcelain inlays, etc. May the book find a place in the library of every progressive dentist.—P.

BOOKS RECEIVED.

Orthodontia, by S. H. Guilford. The third revised edition.

SOCIETIES.

Ohio State Board of Dental Examiners.

THE next meeting of the Ohio State Board of Dental Examiners will be held at the Neil House, Columbus, beginning Tuesday, November 29th, 1898. All applicants for examination should apply to the secretary for application blanks.

L. P. BETHEL, *Secretary*,
Kent, Ohio.

National Dental Association.

AT the meeting in Omaha, September, 1898, the following officers were elected for the ensuing year: President, H. J. Burkhart, Batavia, N. Y.; Vice-President from the East, S. H. Guilford, Philadelphia; Vice-President from the West, T. E. Weeks, Minneapolis; Vice-President from the South, B. Holly Smith, Baltimore; Recording Secretary, Geo. H. Cushing, Fairmount, Ala.; Assistant Secretary, W. E. Walker, Pass Christian, Miss.; Corresponding Secretary, Emma Eames Chase, St. Louis; Treasurer, Henry W. Morgan, Nashville.

Executive Committee—New members added: G. V. I. Brown, C. S. Butler, J. Y. Crawford.

Committee of Arrangements—M. O. Cooley, D. E. Bentley, C. S. Butler.

Niagara Falls, N. Y., is the place selected for the next meeting, 1899.

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CONTRIBUTIONS.

Dr. Jenkins' New Porcelain Enamel.

BY FRED. A. BROSIUS, BERLIN, GER.

DURING a recent visit to Mr. L. Pappenheim's dental depot, at Berlin, I was shown, among other novelties, a new porcelain enamel, which has just been put on the market by Dr. Jenkins, of Dresden. The latter is quite a well-known American dentist, who has made himself a name among our German brothers. We take pleasure, therefore, to introduce his invention in America, giving the opinion of Dr. W. Bruck, who has made extensive experiments with the enamel.

Says he, in a paper read before the Dental Association of the Province of Silesia, which we take from the *Deutsche Monatschrift für Zahnheilkunde*: "After experimenting for many years, Dr. Jenkins has come to the front with a new porcelain enamel, which not only excels the many similar ones, but also seems destined to take the place of gold, in many cases, in the near future. With it one now is enabled to put in almost invisible fillings. It possesses a hardness which even surpasses that of the mineral teeth and, on account of its easy flow in baking, cavities can now be closed up almost hermetically.

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

From several hundred shades, eighteen distinct colors have been evolved; of each a sample has been prepared and these again are put up in a neat shade-ring. These eighteen shades have been claimed sufficient for all cases and are said to keep their color absolutely.

A special apparatus consists of a melting oven, with an opening at the bottom, through which the flame of a blowpipe heats a platina spoon, with cover, fastened to a long handle. In this the porcelain is baked.

Most important is the preparation of the cavity. No sharp edges or undercuts are allowed; introduction and removal of the gold-foil, No. 30 or 40, must be easy. In larger cavities No. 40 is preferred; it does not alter its shape as easily on removing from cavity. The foil is to be brought to the deepest place of cavity first. That is done with spunk in preference to pellets of cotton, which latter often come out in shreds, endangering the exactness of the impression. After the cavity has been filled with spunk entirely, a large piece is then pressed on it, placing the foil nicely over the edges on the tooth. With this the form of the latter and the position of the cavity is given exactly and one always knows where there is enamel to be added during the baking process.

Small bursts in the foil do not matter if not too near the edge of the impression, but practice teaches to take these without any difficulty.

The putting on of the rubber dam facilitates the work very much; some vaseline brought on this, as well as in the cavity, prevents the foil from sticking. Should the position of cavity or condition of patient make the use of the rubber inadvisable, dry the gum carefully and put on vaseline. With an impression of the cavity taken in wax or Stents' mass, the inlay can be finished in the absence of patient and put in at the second sitting.

Dr. Jenkins maintained that the shade of a tooth in a moist state varies a great deal from that in a dry state, he therefore makes it a point to select same only when the teeth are in a moist state! Experiments also have shown that the same shades baked by a different degree of heat varied in color; it was found that enamel baked in too high a degree of heat took a lighter shade. In approximal cavities a lighter shade is desirable.

The gold-foil impression is to be carefully invested in a thin

putty of asbestos powder and water, which is placed in the platinum spoon above mentioned. Every part of the foil must be touched by the investment and the slow evaporation of the water may begin. Slow, because the water steaming off too rapidly would cause the impression to be lifted, spaces would exist under the same, which would make the work unnecessarily difficult. The asbestos, when dry, must still be covering the foil on all sides. The enamel, moistened with absolute alcohol is then placed in the foil in small portions. The alcohol has to burn off first; the spoon is then covered and the mass heated. Dr. Jenkins advised to bake the enamel three times and only after the last baking the same must have a smooth and polished look. The spoon has to be cooled off in water after every baking. New material, mixed with alcohol, is added, until the inlay has the desired shape and look.

A surplus of enamel has to be avoided, it necessitates a grinding off of the inlay after its introduction in the cavity, the polish is then almost entirely lost.

The preparation of the cavity before introducing the inlay is known to all. Small undercuts on the inlay, with diamond disks, are of importance. Weston's cement has proven most excellent in setting inlays; its hardening process is a quick one. The powder of Poulson's, and the acid of Harvard's, also work well together and can be recommended for this work. With small pieces of wood the inlays are quickly pressed in place; for approximal cavities, strips of linen are very useful.

Inventor has used his enamels for making crowns and pivot teeth also. The latter he works like Richmond crowns, with band and cap, the pivot though goes up to the pins of the tooth, where it is bent over to give the enamel a hold. The latter bakes on the tooth so well that one can often grind off the point or pivot partly without lessening the strength of the pivot-tooth. The cooling has to be done slowly as the mineral tooth bursts quicker than the enamel.

Dr. Jenkins sells his invention only complete for \$100.00. This, I believe with others, is a great hindrance to its more general use. The enamel can be baked, without any doubt, with less costly tools.

A Substitute for Unfilled Rubber Plates.

BY W. W. GRANT, D.D.S., ATHENS, TENN.

WHERE rubber fails to fill out in vulcanizing, and the case does not require working over, a substantial substitute, to fill in with is any of the cements (I use Caulk's) colored with a small pinch of crocus powder for red, or ivory black for black rubber. The rubbers with these powders can be closely imitated.

The Itinerant Amalgam Peddlers.

BY B. H. CATCHING, D.D.S., ATLANTA, GA.

THE woods are full of alloy peddlers. The virtues of their wares, are remarkable. Each has the only alloy that should be used; and the other fellows' is not worth office room. This is a sign of professional degeneracy, pure and simple. Not that I am averse to the use of amalgam, but that the demand for an untried article, a cheap article, should be sufficient to support so many peddlers. Such venders should be given a wide berth. They have not a reputation to make and none to lose.

I remember well a very knowing fellow, who called on me. I had a few moments leisure and listened to his fancy tale. Finally, I told him that we had reputable dealers in close proximity who gladly supplied all our wants, and it was our duty to encourage such establishments. He lifted his voice from the low Uriah Heep tone to one of almost anger, and said he never saw dentists so far behind, that he could sell a hundred ounces in Chicago, while he was selling one in Atlanta, and that it showed the up-to-dateness of the profession in the Windy city. Finally he became so obnoxious, that I took out my watch and said to him that within an hour a train would leave for Chicago, and I would advise him to board it and hie away to pastures *green*. It is strange that dentists will buy-stuff of such parties instead of sticking close to the reliable manufacturer. If an alloy only has cheapness as its advocate, it is a very dear article to handle. This rule may be applied to anything in the marts of trade.

Give the alloy peddlers the go-by. They are hunting suckers and generally find them. Their bait sometimes entices the reputable fellow to his ultimate source. I know that all things are cheapening—all except brains. Good, pure, wholesome brains are yet high in the market. But does it require such brains to use, at best, a cheap stuff? I will now lie low and listen for my adversary's gun.

The Importance of Establishing a Technic as Well as Literary Standard for College Entrance.

BY S. H. GUILFORD, D.D.S., PH.D., PHILADELPHIA, PA.

THE good results accomplished by this association in its sixteen years of existence are not only universally conceded, but will ever remain as proof of the wisdom of its organization and its general endeavors to elevate the standard of practice. It was realized that this could only be done by sending into the profession men better equipped for practice than the majority of those then entering it. This required certain changes in the prevailing methods of college instruction, some of which have gradually been brought about while others are in course of development. The association first addressed itself to lengthening the course of study. The recognition of five years' practice as an equivalent of one years' course in college was done away with and an invariable two years' course demanded.

Then came the lengthening of the winter term from four to five and subsequently to six months, after which another year was added to the college curriculum.

With all these advancements, however, beneficial as they were in their results, it was found that a proportion of the yearly graduates were not up to the standard demanded either by the public or the profession, and another change became necessary to remedy the condition. At the time of the organization of this association, and for many years afterward, there were very few dental colleges that inquired into the earlier educational training of those who applied for admission. It seemed to have been taken for granted that anyone applying for admission must have

* Read before the National Association of Dental Faculties, August 29, 1898.

had sufficient mental training to enable him to grasp and pursue the various studies of the curriculum. This proved to be erroneous, for it was found that while a student might, by close application, manage to pass his examination in the theoretical branches, he did not have that general grasp of these subjects which was necessary to make him a well-rounded man.

Following this discovery came the adoption of entrance requirements, which necessitated a certain amount of mental training in the schools before the candidate could be allowed to begin his collegiate studies. These requirements were very moderate at first, but were gradually increased until they equaled the completion of a full grammar course.

This far the plan had worked admirably, principally because it was gradual. Two years ago, however, a further advance was decided upon by which in the course of a few years the entrance requirements were to equal completion of a high school course. This change was so radical in character that it worked a hardship upon many students who were not able to meet it, and who in consequence were debarred from college entrance.

As a result of this, one year ago the latest advance was annulled and the requirements reduced to their previous standard. This retreat from an advanced position was regretted by many schools, and the question of some advancement from our present standard will doubtless come before the association at its present meeting.

In anticipation of this your essayist decided to prepare this paper for the purpose of presenting certain views upon the subject and offering them for your consideration.

As previously mentioned, the raising of the entrance requirements to equal a completed grammar school course has proven itself a wise act, and none have cause to regret it. With less preparatory training it was found that the student's mental faculties had not been properly awakened nor correct habits of study formed, and that he was in consequence placed at a disadvantage in trying to acquire a knowledge of at least some of the more abstruse subjects which he was expected to master.

In view of the fact that the advancement to the present standard has worked well, the question naturally arises as to whether a further advancement would not be advisable, and, if so, what form it should take. Strange to say, we have thus far been

viewing and treating the subject of preliminary requirements from a single standpoint. All of our discussions as well as our enactments have dealt solely with the mental requirements and possibilities of the proposed student, entirely overlooking or ignoring the equal or more important feature of manual dexterity or mechanical bent.

All of us are fully aware of the absolute importance of mechanical talent in the practice of our profession, and we are equally cognizant of the fact that unless this talent is innate it will always be lacking, for it cannot be acquired. No amount of training and instruction can develop a skillful mechanic out of one who lacks the mechanical instinct. If this be so is it not important that we, as teachers, see that those who place themselves under our care for preparation for their life work are possessed of this necessary qualification? In former times, before the wave of progress had swept across the beaten path of dental education, when the student received his preliminary, and at times the greater part of his dental training in a preceptor's office, or rather laboratory, it was an almost universal custom for the practitioner, before accepting a student, to ascertain whether he possessed a natural bent in the line of mechanics.

This was done by inquiring into the young man's turn of mind, his fondness for tools and their employment in constructing some of the simple mechanisms so necessary to the complete happiness of boyhood. In addition to this it was customary to accept the student for a certain period upon probation, to still further ascertain his adaptability to his proposed life-work.

While in these later times we recognize the shortcoming of our predecessors in not demanding at least some educational requirements from their students, may we not at the same time take a hint from their methods, and incorporate some of their requirements into our own? In other words, has the time not fully arrived when we should demand mechanical talent as well as scholastic acquirements as preliminaries to entrance upon the study of dentistry?

It would seem that in this matter as in many others we have been rather blindly following in the footsteps of our sister profession, medicine, not fully appreciating the differences that exist between them. Dentistry occupies rather a unique position among the sciences and professions, in that to be of the greatest

service to mankind the practitioner must necessarily be possessed of considerable manual dexterity.

This is not required of the lawyer, the theologian, or the physician in an ordinary practice, for their success depends mainly if not entirely upon the development and use of their mental faculties. For one undertaking the study of any of these professions it is therefore quite proper that the only qualification demanded should be a scholastic one.

Should the student of medicine prove to be possessed of mechanical talent, he will, after graduation, naturally drift into the special practice of surgery, which will be more to his taste, and afford him a better field for the employment of manipulative skill. Should his taste not run in the mechanical line, he still has in the domain of general practice and some of the specialties a large field for successful effort.

With us it is different. To properly serve the needs of his patients the dentist must be skillful with tools, for so large a part of his daily work is manipulative in character. If he lacks this skill he must prove a failure, for in the practice of dentistry there is no place for the employment of the mental faculties alone as there is in medicine.

The vocation of the instrumental musician bears some little resemblance to our own in that it requires for its successful pursuit not only the development of the mental and esthetic qualities, but an absolute dependence upon manipulative ability. Without the latter the former quality would be of no avail. A teacher of instrumental music would probably prefer to have as his student one with a liberal education, for he would add luster to his chosen calling; but he would certainly not accept or retain as a pupil, no matter what his literary attainments may be, one who was lacking in technical ability or possibility.

Why, therefore, should we do less?

The dentistry of to day owes much of its progress and high standing to the class of men who entered it from thirty to sixty years ago under the private studentship system. Almost without an exception they were men possessed of a high order of mechanical and inventive ability, and they were so because they were selected from the mass by their preceptors.

It therefore seems to me that it would only be the part of wisdom for us to so amend our requirements as to include manip-

relative ability, and where this is lacking to reject the student and advise him to take up some other calling. It certainly does not seem just to accept a student who is by nature lacking in that quality which is absolutely essential to his success in practice.

With our greatly improved methods of systematic technic instruction we have certainly accomplished good results with the material given us, but how much better might have been the results with the material properly culled. Many students, as we all know, manage to work along through college, performing their allotted tasks and passing the required examinations, who we are morally certain will not be successful in practice because all that they accomplished was performed in a labored way, without any display of actual skill.

Are we just to them and to the public in permitting this? Should we not discover the lacking quality before accepting them, or find some way of discovering it in the early part of their course and kindly advise them to change their vocation?

If by some extra effort on our part we were able to develop skill where natural ability is lacking the conditions would be different, and we would be relieved from the necessity of considering the question; but unfortunately we cannot grow the plant where seed or soil is lacking.

The question now arises, What shall the mechanical standard be, and how may it best be incorporated with the other requirements? This is not for me to answer. It is a problem, and its solution will require the united wisdom of the members of this association.

By way of suggestion, however, I would offer the following:

1. The student should be assigned a desk or bench in the laboratory, furnished with the necessary tools and material, and be given an appliance or device which he is to reproduce as accurately as possible.

2. The task assigned should be such as to preclude the probability of his having done work of exactly similar character before, so as to guard against mere automatic repetition.

3. The ordinary laboratory processes, involving no special skill, such as repairs or additions to vulcanite plates, should be excluded.

4. In cases where the candidate has had no experience in the use of some of our special tools or processes, such as soldering,

swaging, etc., the test should be simple in character, and might consist in requiring him to reproduce from a block of wood, by means of saw, file, and penknife, some geometrical form, as a cube, pyramid, or rhomb.

5. In cases where the applicant has had some laboratory instruction or practice before coming to college, the test should be a little more severe in character. Inasmuch as regulating appliances are so varied in character, and often combine a number of different manipulations in their construction, such as filing, bending, soldering, etc., the construction of one of unusual design would probably furnish the best all-around test of ability.

6. During the test the student should be isolated until the task is completed. A competent demonstrator should watch the progress of the work from time to time, so as to form an opinion of the candidate's handiness with tools, but should offer no aid, even in the way of suggestion.

A Monthly Summary from Our Foreign Exchanges.

Translated expressly for the OHIO DENTAL JOURNAL.

By H. PRINZ, D.D.S.

Analysis of the Chemical Composition of Normal Human Teeth of Different Ages.—The mineral salts of the enamel will not increase nor decrease in the ready formed tooth; the same composition has been found in the two-year old child and in the seventy-year old man. Dentine varies in its composition of inorganic substances, in one case the tooth of a five-year old boy showed a higher percentage than that of an eleven-year old girl. But these variations are simply a matter of individuality, the sex has no influence upon the chemical composition. Cement was found to contain about forty per cent of organic material, the same amount as bone has, and in regard to lime salts, both cement and bone are equal. Chemical analysis, therefore, ratifies the microscopical examination, cement is bone cover. —Richard Schulz, *Correspondenz Blatt für Zahnärzte.*

Report of a Case of Acute Poisoning with Carbolic Acid and Its Recovery.—The wife of Dentist George Seitz went to

wards evening to the medicine chest of her husband to get a potassium chlorate solution which she was taking for a beginning angina. In the darkness she made a mistake in the bottles, getting hold of the carbolic acid instead of the potash solution. Being tired, she took a rather big swallow right there. With a loud outcry for her husband she ran to the adjoining room and broke down. The strong odor of carbolic acid and the bottle which she tightly clasped in her hand, told the story. At once the doctor ran for some liquid, and being in doubt if water or milk would be more indicated, he took the vinegar jug, remembering that he once read that it was recommended as an antidote for the acid. The patient drank eagerly, but soon violent spasms set in. Two morphine injections were made and to prevent a possible collapse, a further injection of camphor-ether solution gave momentary good benefit. Some more vinegar was taken, about a quart in all, but as it became unbearable, milk was substituted. In the meantime a physician arrived. The stomach tube was employed and the partaking of large quantities of warm water caused heavy vomiting. The intense carbolic acid odor gave evidence that the acid had reached the stomach. Small pieces of ice and palliative treatment gave much relief, and in a few days the patient was restored to normal health, except a big red scar on the chin. A chemical analysis showed the vinegar to contain 11 per cent of acetic acid with the usual minute traces of other ingredients, viz: tannic acid, etc. It is an open question if the recovery can be attributed to a single one of the employed remedies or to their combined action.—*George Seitz, Journal für Zahnheilkunde.*

Eczema of the Lips from a Mouth-Wash.—A little boy of about six years had a squamous eczema about the mouth for some months. The upper and lower lips and the chin were swollen, causing a very painful itching sensation. All the employed remedies failed till the boy was advised to omit his daily mouthwash, "odol." Recovery set in momentarily, showing that "odol" was the cause without doubt. Odol is a combination of salol, alcohol, saccharin, and various ethereal oils. Three similar cases came under the author's treatment. After the prohibition of the mouth-washes which contained ethereal oils in solution, the skin eruptions would heal spontaneously.—*A. Neiser, Therap. Monats.*

Cast and Model.

ABSTRACT OF PAPER READ BY DR. WILLIAM ERNEST WALKER AT
NATIONAL ASSOCIATION, SEPT., 1898.

A GREAT deal of confusion has surrounded the two terms—"cast" and "model," and the distinction to be drawn between the two. The suggestion that "the term 'model' serves as the title for a plaster cast, which is to be reproduced in metal; 'cast' to be applied to the plaster not so reproduced," did not prove acceptable to the Committee on Nomenclature of the American Dental Association. The committee, through its chairman, Dr. S. H. Guilford, deciding that "the practice of calling all plaster casts 'models,' appears to be more acceptable;" the word "cast" being included in the list of terms, the use of which was recommended by the committee to be discontinued. This decision, however, is not universally satisfactory. Much descriptive detail may be avoided by impressing the following simple distinction upon the mind of the student or laboratory assistant: The first step is the "impression;" this forms a matrix in which is poured the plaster, which forms a "cast." This is not a model of anything, but is ready for use in the production of a vulcanite, celluloid or cast denture. If, however, it is desired to make a die for swaged work the cast is *converted* into a "model," by so shaping it that it will accurately represent the die which is to follow. The successive stages in the process are—1, impression; 2, cast; 3, model; 4, sand-matrix; 5, die; 6, counter-die. This consecutive series is readily fixed in the mind, and, thenceforth, there is no confusion; each term represents a definite stage in the production of an artificial denture; a clearly defined object in the mind's eye. If a student, or laboratory man, is told to make a "cast," he simply fills the impression in the ordinary way; but if told to make a "model," he first pours the cast, then thickens it if necessary, and trims it into proper shape to serve as a model for the metal die which is to follow. It appears, then, that we should hesitate before positively adopting the word "model," to the exclusion of the term "cast."

DISCUSSION.

DR. C. L. GODDARD was glad the paper had been read, as it covers the points he makes in his Lectures on Prosthetic Dentistry. He hopes the association will approve the distinction made in the paper.

DR. S. H. GUILFORD takes exception; he has gone over the ground very carefully. The Committee on Nomenclature of the American Dental Association had thought it wise to use one term whenever possible. The only difference between a cast and a model is a half-inch in height; not sufficient to justify the use of an additional term. Better call both "models."

DR. MOLYNEAUX had for years used the two terms, as defined in the paper read, and had argued in favor of that distinction at the Asbury Park meeting of the American Dental Association, but had yielded to the recommendation of the committee.

DR. GODDARD thinks there is more difference between a cast and a model than that made by Dr. Guilford; the cast, when it is to be used as a model, has not only to be increased in height, but it must be trimmed, in order that it may drop readily from the molding-sand.

DR. BARRETT: "Cast" is the proper noun to be used as the object of the process of casting; a model is not cast; a model must be manipulated with the fingers; a cast is the result of mechanical crystallization.

The point in nomenclature was referred back to the Section for further consideration.

Materia Medica and Therapeutics.

ABSTRACT OF REPORT BY DR. J. S. CASSIDY AT NATIONAL ASSOCIATION,
SEPT., 1898.

THE acceptance of the bacterial genesis of many oral diseases has been followed by a deluge of drugs of antiseptic quality, culminating in a tendency to ignore the very new remedies and to investigate more thoroughly the value of those longer known. The older drugs, while they may have some objectionable qualities, are comparatively simple in their chemical and therapeutic

action, and are time tried and reliable. They are non-secret and many of them not even proprietary.

Formaldehyd, though apparently new, is simply the active principle of the earth of ant-hills, which, from time immemorial, has been used as a local remedy, in continental Europe, in the domestic treatment of swellings, bruises, suppurating sores, abscesses, neuralgia, and rheumatic pains. Formalin, while a combined disinfectant, antiseptic and germicide, has irritant qualities which make it objectionable for use in the mouth, cases of serious sloughing of the gums being reported. There is, however, no better agent for destroying infective matter on steel instruments without injuring them. For this purpose it is harmless and immediately effective, the instruments, burs, excavators, etc., after cleansing them, being dipped in full strength formalin and wiped off dry.

CATAPHORESIS.

The latest phase in cataphoresis is a presentation of the definite rules of electrolysis, enabling the operator to select the proper pole to be used in connection with the cataphoretics used in dentistry. Even non-conductors are induced by the pressure of the current to penetrate the tissues further than by mere absorption.

NITROUS OXID.

The action of nitrous oxid was discussed in the report of Section V. The conclusion reached by Drs. Kemp and Bush, that it exerts "a specific anesthetic influence"—not merely depriving the patient of oxygen—is considered and endorsed, but the statement that its influence is due to the retention of CO_2 in the arterial blood is criticised. It goes through the arterial circulation unchanged, superceping for the time, iron, the oxygen carrier of the body. CO_2 being developed in greater quantity than usual cannot escape freely, the reduction of the ferric oxid in the blood not being accomplished, leaving the iron unprepared to convey the CO_2 as ferrous carbonat to the lungs. But if either pure oxygen or air be administered simultaneously, or at short intervals, one of the physiological functions of iron is restored sufficiently to prevent cyanosis. This is simply the carbonic acid theory of anesthesia by nitrous oxid N_2O revived, and it is gratifying to know that it is being investigated by such an institution as the John-Hopkins University.

Anatomy, Pathology and Surgery.

ABSTRACT OF REPORT OF DR. W. C. BARRETT AT NATIONAL ASSOCIATION,
SEPT., 1898.

(The journalistic literature of the past year.)

THE VASCULAR SUPPLY OF THE TOOTH-PULP.

THE papers of Dr. J. L. Williams and his micro-photographs support the view, held by some anatomists, that the vascular supply of the tooth-pulp must come from the pericementum, and that preparations and cuts, representing the dental arteries as giving off branches which enter at the apical foramen of each tooth root, are a misrepresentation of the actual condition; the pericementum being in fact the placental organ that supplies the tooth-pulp with nutriment in all cases.

On the other hand, Dr. M. H. Cryer's preparations lead to the belief that the old text-books were right. But nothing is yet conclusively proved. Dr. Williams must show that his preparations positively bear the interpretation given them by him; and Dr. Cryer must determine, by injection, that there is a direct communication of the dental pulp with the dental artery, before his deductions can be accepted as final. The subject is one that may well engage the attention of microscopists and anatomists during the coming year.

THE BROPHY OPERATION.

Prof. Brophy has performed his operation for the radical cure of cleft-palate a number of times during the past year, and in every case, so far as known, it has proven a success.

At a very early age—preferably within a week of birth—the separated osseous borders of the palatal arch are brought into coaptation, and held thus until union has taken place; subsequently closing the soft palate, of which the edges have been brought nearly into apposition by the previous closing of the hard palate, so that there is but little stretching of the tissue, or drawing away of the closed velum from the posterior walls of the pharynx—a fatal defect in the operation of staphylorrhaphy, resulting in failure to effect any radical improvement of speech or deglutition. Bringing together the divided palatal walls, in the "Brophy operation," necessarily reduces the maxillary arch,

the upper jaw being contracted from one-third to one-half in some cases, leaving it not more than three-fourths of an inch in breadth. The most surprising fact is that, if the operation is performed early enough, the superior jaw develops to normal size, the upper and lower deciduous teeth erupting in perfect occlusion.

In the discussion of this portion of the report, Dr. Patterson said that as he had formerly been opposed to the Brophy operation, he now wished to place himself on record as being in favor of it, having been converted through his knowledge of three successful cases. He had never seen, by any other method, any cases that could be called a success in any shape or form. The only object of the operation for cleft-palate is the improvement of the articulation, and in this the Brophy operation is a success.

Dr. Barrett considers the operation a great advance in surgery. As the Great Physician anointed the eyes of the blind and they saw, so modern dental surgery touches the lips of the dumb and they speak. It is a miracle as profound as that of opening the eyes of the blind. For the first time in the history of surgery, cleft palate can be cured. It is the grandest triumph of our profession, for it is oral surgery. The operation is radical in its nature and is performed within a week after birth, preferably not after the first year.

Dr. Brophy has recently performed his 495th-6th-and-7th operations. In only one case did the infant die, and then not as the result of the operation.

On motion of Dr. Eug. H. Smith, Dr. Brophy was invited to prepare an address on the subject of "Surgical Operation for Cleft-Palate," for the next meeting of the association.

He accepted the invitation, and promised, if the meeting were held within a convenient radius of Chicago, to present four or five small children who had been operated upon at a very early age, that the results of the operation might be seen.

PYORRHEA ALVEOLARIS.

There has been nothing definitely settled, as yet, as to the various theories entertained concerning the different hypotheses advanced as to the etiology and pathology of this disease. The condition presents many phases, some of which are local and some probably general. Of these there should be a differentia-

tion, and a clear line drawn, and the symtomotography of the various morbid changes outlined. That in all cases, not purely local in character, the pericementum is seriously involved, seems apparent, because its destruction—either by the extraction of the involved tooth, or by the temporary removal and subsequent replantation and consequent new pericemental formation—affords an almost infallible cure. The subject needs further elucidation.

In the discussion of this subject, Dr. Patterson said that he did not believe that there was such a thing as pyorrhea alveolaris without deposits. He believes they are always there, though not readily noticeable; a *shaving* process will often remove it when the probe fails to find it, and a cure follows, showing that it was there. On a tooth that has been removed a strong eye-glass will often show very small patches, not otherwise to be detected, but which are as irritating as larger accumulations.

DR. BARRETT: Where there are pockets there are always deposits. But in many cases there are no pockets, but a wasting purulent condition of the pericemental membrane.

TREATMENT OF THE ANTRUM.

A difference of views exists as to the use of drainage tubes in the treatment of degeneration of the mucus membrane of the antral sinus. In opening the antrum the object is either to afford the means of exploration, or to give drainage to pus. If the former, there is no necessity for keeping the opening patulous. If the latter, tubes, plugs and tents tend to retain the discharge and perpetuate the septic condition. The very first principle of antiseptic surgery is that pus must at once be eliminated, at any risk, being infective and degenerative in its very nature. The presence of even food and saliva in the sinus is infinitely to be preferred to that of pus, as it will work its way downward by the way through which it was forced. Food does not rise against gravity, and saliva seeks the most dependent point. If the opening is as large as it should be, to serve for drainage, it will not be closed by hypertrophic growths, as is urged, and if they are formed they are easily removed with a bistoury, and their reformation prevented by a simple cauterant. The irritant presence of a tube, on the other hand, is certain to cause exuberant granulations.

In the discussion of this portion of the report of Section VII.

Dr. Brophy said that naturally the opening must be located at the base of the cavity—the most dependent part—and must be sufficiently large to permit of thorough exploration and ocular observation. The proper point is naturally the canine fossa. The origin of the disease must be ascertained, whether it is of dental origin, alveolar abscess, etc. The nasal passages must be closely examined; ascertain whether the frontal sinus is involved; observe the ethmoid cells. If there is diseased bone it must all be removed, as it will be an obstacle in the process of repair. A large opening is necessary in serious cases, and a canula with a flange on the outside to hold it in place, is essential to thorough irrigation of the cavities. A small opening is of no avail except for the temporary evacuation of the cavity.

Dr. G. V. I. BROWN prefers to pack the cavity with antiseptic gauze, rather than use a tube, which is a source of disease. The gauze packing does not interfere with the process of healthy granulation, and does not offer the disadvantages of tubes.

Dr. EUGENE H. SMITH said that the first step is diagnosis. If the disease is due to dental irritation the antrum may be evacuated through the canal of the tooth which caused the trouble. Proper treatment of the dead tooth, removing the cause of the disease, may be sufficient, without any large opening.

Dr. PEIRCE described a case due to dental irritation, which was treated through a small opening along the buccal roots. The statement that a large opening is always necessary should be modified. If diagnosis is carefully made, a small opening will often be found to answer all purposes.

Dr. CRAWFORD said there is no field in which more mistakes in diagnosis and in treatment are made, than in antral troubles. He had seen no less than five cases recently, starting from the teeth and opening into the nasal cavity, diagnosed and treated as antral trouble.

Dr. BROPHY said that in serious, chronic cases, a large opening is necessary. If the cause of the trouble is a simple alveolar abscess, the case is different. But in a large majority of cases, he believes the repeated washings and drenching do more harm than good.

THE ACTION OF ARSENIC.

The precise nature of the action of arsenic, especially in its application to the dental pulp, has never been demonstrated nor

explained. That it causes death to the pulp by congestion and strangulation at the foraminal apex is shown to be an error by the fact that it is equally fatal to the pulp of a partially developed tooth with open apex, and the end completely patulous. Death, in consequence of the internal administration of arsenic, appears to be due to nervous shock, terminating in complete collapse, seeming to indicate some special dynamic energy. The minimum amount required for pulp devitalization, when directly applied, has not been definitely ascertained. A second application is a great mistake. If the tissue within the pulp chamber is found devitalized there is no question concerning that within the root canals. The sensitive point at the apex, so often encountered, is not vital pulp tissue, but is due to an intensely inflamed, irritable condition of the corpuscles of the cementum at the extremity of the root, due to the use of an unnecessarily large amount applied to the pulp, and left in the tooth too long.

A second application may destroy the vitality of the apical cementum altogether and induce serious trouble. Instead of another application of the irritant poison the contrary treatment should be inaugurated. Neutralize the arsenic by an application of dialyzed iron, and use soothing anodynes until all danger of further action of the poison has passed away. Then clean and fill the canal.

Section VII. offered three other papers—(1) Anatomy; a Critique, by Wm. Ernest Walker; (2) The Comparative Method of Teaching Dental Anatomy, by A. H. Thompson; (3) Paper illustrated with slides, by M. H. Cryer.

Before reading his paper, Dr. Walker asked permission to test a point in anatomy, which he had made a subject of investigation; namely, whether the molars touch, when the incisors are placed edge-to-edge, in biting contact.

In response five of those present raised the hand, signifying that their molars do so touch; thirty-five signified that they do not touch.

Dr. Walker then read his paper, of which we give a brief abstract:

While congratulating the dental profession on the great improvements in 1897 edition of Gray's Anatomy, especially in the section on the mouth and teeth, he directs attention to a few minor errors which have crept into this section, to which the

attention of students should be directed. In the definitions of the surfaces of the teeth (page 932) they are named as labial, lingual, buccal, distal and proximal. The mesial surface is not named, proximal being defined as the reverse of distal, which is defined as "the surface away from the mesial line." The word *mesial* not being defined, looking it up in his dictionary the student is led to believe that the mesial line must pass antero-posteriorly between the superior incisors, parallel with the tongue, and that consequently the surface of the tooth which is "toward the mesial line"—the definition of proximal—must face the sides of the tongue. This was certainly not the idea intended to be conveyed by the definition of the proximal surface of a tooth. In the text, moreover, proximal is not used as the name of a tooth surface, except in the definition, mesial being substituted, although nowhere defined.

Mesial and distal are both used in conformity with the definitions of Dr. G. V. Black as found in the Transactions American Dental Association, 1895: "Distal—away from the median line of the face, following the curve of the dental arch;" "Mesial—toward the median line of the face, following the curve of the dental arch." Proximate (proximal) "applied to a surface of a tooth (either distal or mesial) which is next to another tooth."

These definitions are more satisfactory than those given in the 1897 edition of Gray's Anatomy.

On page 935 we read: "The movement of the human mandible is forward and downward, the resultant of these directions being an oblique line, upon an average of 35 degrees from the horizontal plane." As authority for this statement, a foot note refers to "W. E. Walker, *Dental Cosmos*, 1896."

This statement as given, however, is misleading. *Mandible* should read "mandibular condyle;" "35 degrees from the horizontal plane" should read "40 degrees from the facial line," as there is no "horizontal plane" in the head. The plane of condyle movement forms an average angle of 35 degrees with the plane of occlusion, the latter forming an average angle of 15 degrees to a plane perpendicular to the facial line—a plane which could be called *horizontal*, only when the facial line is vertical—which plane would form an average angle of 50 degrees with the plane of condyle movement, instead of 35, as stated in the text.

Dr. Walker quoted from the text the statement that, "When

the lower jaw is advanced until the cutting edges of the incisors are in contact, the jaws are separated; but as the highest part of the lower arch—the third molar—advances, it meets and rests upon the second molar of the upper arch, and thus undue strain of the incisors is obviated.” A similar statement is made by Bodecker, in his “Anatomy and Pathology of the Teeth,” and is also repeated and amplified in Dr. Burchard’s recently issued “Dental Pathology,” as follows: “While the jaws are in position, with the incisors in occlusal contact, they do not bear alone the stress of whatever muscular force is applied, but it will be seen that the distal cusps of the third molars, the highest points of the dental arch, advance and meet the distal cusps of the upper second molars, so that when the incisors are in edge-to-edge occlusion, although all of the other teeth are separated to an extent governed by the overbite, the dental arch is supported posteriorly by contact of the last molars, thus preventing undue stress upon the incisors.”

Dr. Walker said that his studies of the articulation and occlusion of the human jaws had convinced him that this statement is not based on fact. In order to test the point, he had, on one occasion, taken casts of students’ mouths, at the dental college, taking them as they came—rejecting only those mouths in which very many teeth had been extracted—until he had taken, and was prepared to exhibit, thirty-three casts of jaws with the teeth in edge-to-edge occlusion. Of these, seven were excluded because of abnormality, there being no over bite in the position of rest. Of the twenty-six left, twenty-two had the molars *entirely free*, when the incisors were thus placed end to end. One has contact of the molars on the right side only, where the second and third molars have come forward, due to loss of the first molar. The second case, in which there is molar contact, has lost the left upper second bicuspid, and left lower first molar; also, the right lower second bicuspid and the first molar. The third of the “contact” cases has no bicuspids and only one molar on the left lower side, and shows great wear of the incisors. He also has casts of three unusually symmetrical mouths, with the teeth both in normal occlusion, and also in the *biting* position. These casts also fully sustain the position that—as a rule—the molars are not in contact when the incisors are in edge to edge contact. He has also made it a practice to question intelligent individuals on this

point, and finds that it is a rare exception, rather than the rule, that the molars are thus in contact. He has concluded that the idea must have originated in a misunderstanding, by Dr. Bodecker, of Dr. Bonwill's advice to *construct artificial* dentures with what he calls "a balancing articulation; making ~~the~~ artificial molars touch at the same time that the incisors meet, in order to support *the plate*, and prevent its displacement in mastication. The error, which appears to have thus originated with Dr. Bodecker, has apparently been perpetuated by subsequent writers, without any effort being made to either confirm or refute it, as far as is known to the writer, who requests that if investigations have been made on this point, the results be made known, that a definite conclusion may be reached as to the correctness, or otherwise, of the statement with which he takes issue.

Dental Text-Books—A Dictionary of Dental Terms.

IN the report of Section II., National Association,—Dental Education and Nomenclature—the committee suggests that in future editions of text-books, now in use, and in all new text-books, a glossary of terms employed, be inserted, one of the great needs of to-day being a comprehensive dictionary of dental terms. Section II. has decided to take the first steps in this direction, and asks the co-operation of the entire national association, suggesting that the chairman and secretary of each of the ten sections take steps to secure a list of all the important terms in their respective branches, sending the same to Section II. at as early a date as possible.

Report of the Committee on Foreign Relation of the National Association of Dental Faculties.*

PRESENTED BY W. C. BARRETT, M.D., D.D.S., CHAIRMAN.

To the President and Members of the National Association of Dental Faculties:

THE special committee on recognition of degrees in foreign countries, and the comparative value of foreign degrees in this

* Report made at Omaha, Nebraska, August 29th, 1898.

country, appointed at the last meeting of this Association, begs leave respectfully to report as follows :

The scope of the investigation of the committee has been somewhat changed from that which would appear to be indicated by the announcement in the published proceedings. It should not be forgotten that there are really no foreign degrees in dentistry, the nearest approach to this being the Licentiate in England. America is peculiar in having a distinct and separate diploma for the graduates of distinctly dental colleges. We can not hope for the recognition of this distinction, until our course of instruction is fully comprehended in Europe, and the reputability of our degree established. The report of your committee, then, will specially consider the preliminary steps which we believe it proper to take before commencing further agitation. The subject is of the deepest significance, and involves our whole system of education. There can be no mutual recognition until there has been secured some common ground on which the profession of the various countries of Europe and of America can meet. At present the systems are too diverse, and involve too many seeming contradictions to allow any real reciprocity. Yet that is a consummation devoutly to be wished, and certainly we in America should spare no pains in the endeavor to bring it about. Hence the appointment of a committee to take the subject into consideration by the supreme authority in matters educational among us was doubtless a wise movement, and one which in the opinion of your committee should be persistently followed up. Indeed, the committee has received many letters highly approving of the action taken, with the promise of a hearty co-operation on the part of American dentists resident abroad.

That this body may act intelligently, it seems necessary in this report to review, as concisely as is possible with thoroughness, the real situation, with the view of securing a better state of affairs.

It must be remembered that scholastic dental practice, with the separate teaching which has been found necessary, is of quite recent origin. The first distinctive dental school was established in America in 1846, less than sixty years ago. For more than forty years all didactic and class instruction was confined to this country. Within the past twenty years dental schools have been organized in some of the countries of Europe, usually in connec-

tion with hospitals, for the purpose of securing clinical instruction and material. There has never been any reciprocity between the schools of the two continents, if we accept the recognition temporarily accorded by England to the dental departments of Harvard and Michigan Universities. The conditions obtaining in the two continents too widely vary. The one is long settled, possessing the real erudition that can only be found in nations that have a past, but imperatively dominated by the traditions and precedents which are the natural outgrowth of heredity. The other has been a new country, with no educational or other institutions hallowed by centuries of growth and progress, and possessing the weight of ancestral influence. In the settlement and development of this country our people encountered obstacles totally unknown to the older states of Europe. Precedent there was none to guide, and tradition there was none to influence. The problems which confronted them were conditions existing, and not theories for consideration. The forces of nature were in one sense our foes, and not our allies. It was necessary first to overturn and reconstruct that which nature had already constructed. The struggle to accomplish this made of us a practical, inventive, ingenious people, who care mainly for ends and little for methods, while Europe respects no practical accomplishment that is secured through irregular, unacknowledged methods.

All these methods are reflected in the status of the dental profession here and abroad. Europe can not be brought to believe in a practice not founded in a liberal preliminary education, while we are, as a whole, too careless concerning antecedents, so long as anything practical is assured. In Europe, if a man has a university education he is popularly supposed to be competent to practice any profession—law, medicine, divinity, or any of the specialties—any distinct instruction being required only to make him acquainted with the tools that he must use. The university degree is supposed to include everything lesser, and hence there is no necessity for any other, that comprising all.

We, in America, have instinctively recognized the desirability of a university training by founding many schools without sufficient endowment for fair independent support, thus really cheapening the university course. This has been through the endeavor to extend educational facilities to the masses, here again looking toward ends and not means.

The natural consequence of all this to our profession has been that in America to day are probably found the best skilled operators and the highest development of practical work, while in erudition we are in the rear of several European countries.

It may thus be seen that it is difficult to find a common ground on which the professions of the old and the new worlds can stand in equality. Europe will tolerate nothing that does not bear the stamp of regularity. We are satisfied with anything that accomplishes the end sought.

The curricula of the schools of the two continents materially differ. But that could be overlooked, or they might be harmonized. The essential variation lies in the methods, or way through which admission within the ranks of the profession is secured. The old countries jealously guard the doors of entrance. We throw them wide, or at the best erect a barrier that is too easily overleaped. Europe declares that the learned professions must be reserved for the learned classes, and that any who enter must come through the door of a liberal education. We urge that the only sufficient qualification is fitness and practical knowledge. Europe will never come to our standpoint. Can we, or should we, attempt to reach hers? In the process of time this may undoubtedly be brought about. Already in America we see the effect of a comparatively low standard of requirements in the overcrowding of the professional ranks, so that they are losing their distinctive respectability and status, and with that their influence for good is circumscribed. Should this acceptance of the professional tone continue for any length of time, there will be no distinction between the professions and trade. Indeed, we find to-day many who contend that no line of demarcation should be drawn. Colleges of law, medicine and divinity, with their specialties of dentistry, pharmacy, etc., are so multiplying that the consequence must eventually be self destruction, and the annihilation of all professional sentiment. A limit must be placed on the number of schools, and this can only be done by raising the professional standard to a point that will shut out unworthy and unqualified colleges and their students. When this is done, and our preliminary educational standard is sufficiently advanced, with our practical methods and operative skill we shall be prepared to force the profession of Europe to come to our standard, if we are in advance of them, while if they are ahead of us we will be equally bound

to reach their level. Even as it is, we are fast approaching each other, they growing more practical and we more erudite. To hasten the desirable end, in the opinion of your committee this Association should endeavor to secure the co-operation of our confreres of the different countries by some official reciprocity, and we believe that the best method to accomplish this would be through the appointment of a standing committee on foreign relations, whose duty it shall be to make us better acquainted with European educational methods and curricula, and to inform them of the advantages of ours. This might smooth many of the asperities and remove many of the prejudices which work to the detriment of both at the present time.

The second matter referred to this committee involves our relations with our American confreres living and practicing abroad. This is closely allied to the subject already considered. American dentists practicing in Europe have bitterly complained of the granting of the peculiar American degree to those who are, in foreign countries, considered unqualified. There is no questioning the fact that this has been done in the past. The time once was when foreigners flocked to our shores to complete their dental education by an American course of study, and by the securing of an American degree. This was materially checked by irresponsible institutions which conferred their honors too indiscriminately. The American degree was fast falling into such disrepute that it became necessary to do something, and accordingly this national organization of teachers was formed. I need not enlarge upon its great accomplishments. But unfortunately it was not conceived soon enough. Cause for reproach had already been given, and Europe has not hesitated to take advantage of it to her own benefit and in her own interests, and hence the D.D.S. does not now receive the consideration to which of right it is entitled, nor has sufficient credit been accorded to the work of this association. It takes a long time to live down the bad reputation that may be gained in a day.

Two things are charged by American dentists practicing in Europe :

First—that students from the old countries are received by our schools and given advanced standing on the presentation of certificates in foreign tongues which are really worth no consideration whatever.

Second—that diplomas are practically sold by American institutions, and degrees conferred *in absentia*.

There is, unfortunately, no disputing the fact that our confreres abroad have sometimes had cause for complaint that the value of their diplomas has been depreciated, and that they have **not been sufficiently** protected by the schools granting them. Even since the organization of this association of colleges, its rules governing the admission of students have been violated on different occasions, through ignorance of the value of some of the certificates which the regulations have made necessary for advanced standing. It is also more than probable that worthless, and even fraudulent certificates, have sometimes been used as pretexts for giving advanced standing in certain American colleges, when their real character should have been well known by the authorities. A foreigner who desires an American degree, and who occupies but a low social position at home, procures a certificate from some unqualified source, perhaps under false representations. It is written in a foreign tongue and sealed with some pretentious seal, possibly that of an emigration or other bureau. This he presents to the American college, assuring the authorities that it represents a definite course of dental study. The dean is perhaps unable or indisposed to have it verified, and it is accepted, the applicant under it is admitted to the senior course and graduated at the end of a single term. Thus after an absence of but a few months the student, perhaps a servant or a barber's apprentice who had become possessed of a little money, returns to his native land and flourishes in the faces of his former associates a diploma that should be the distinguishing characteristic of an educated man, and claims to be the confrere of those who have honestly earned a certificate of fitness from an American school, and upon whose diploma this unmerited scandal and disgrace has thus been brought.

It is possible that the institution thus offending may have been nothing more than careless. It would take weeks to verify the certificate presented, and then it would be too late for entrance. There are no means at hand by which the value of the document can be ascertained, and so the applicant is given the benefit of the doubt and admitted to advanced standing.

Formal complaint was last year made by American dentists in Switzerland in the case of a man named Stauber, who was

admitted to the senior class of a college having membership in this body. He had been permitted to join upon the presentation of a foreign certificate. Culpable negligence seemed to have been exercised, and had it not been for the energetic protest of our confreres abroad the student would have been graduated at the end of a few months. Upon the presentation of the case the college reduced Stauber to the freshman class, and he must wait for his diploma. It is further charged that he was matriculated when not in this country, the date of the closing of the time for registration having expired before his arrival in America. Such cases as this should be closely investigated, that the offending college may be punished if guilty, or exonerated if innocent.

It has appeared impossible in many instances to determine the character of the certificates presented. The foreign school, or pretended school, is unknown here. We have no list of such, and great injustice might be done to applicants if the document is refused, provided it be genuine and sufficient. But it is quite proper to insist upon the endorsement of some known authority. If, as it now is, the authorities are conscientious in the matter and ask for a verification of the document presented, the prospective student perhaps brings a countryman who is suborned to give a false interpretation of it. Or he goes to a rival school, representing that the first to which he applied, and which calls for the additional testimony, had accepted him, but that he had found the college to be inferior to its neighbor, and so he wishes to transfer his matriculation to a better one. That appeals to more than one perverted sense, and he is accepted on his mere assertion, skillfully made, that the document had been approved by the other institution, and is given advanced standing.

As for the determination of preliminary qualifications, that is a yet more difficult affair. The systems of general education in different countries are so diverse that it is almost an impossibility to decide what may be accepted as the equivalent for the standard of the National Association of Dental Faculties. And so the reception of students from abroad is a matter in which the most conscientious dean may be at fault.

This condition of affairs has long existed. It forms the basis for many bitter complaints on the part of both foreign and American dentists practicing abroad. It very loudly calls for reform, and to your committee it seems that the good name and

reputation of this association is concerned, and that we are in honor bound to seek some remedy,

The communications from abroad that have been referred to this committee suggest that a board of European dentists should be appointed by this body, who shall take cognizance of such cases, and whose endorsement of the status of a proposed student shall be necessary for his matriculation in any recognized college. To give to such a foreign and irresponsible board plenary powers in the acceptance of applicants for matriculation from abroad, is of course quite impossible. We have no legal or moral right to delegate the authority that has been by law vested in the responsible faculties of our colleges. In some of the States the determination of the qualifications is vested in State authorities, and they could not and would not delegate it to any board whatever. In the State of New York the college officers have nothing whatever to do with the determination of the preliminary qualifications of applicants. They must obtain from the State regents a dental student's certificate before they can be accepted.

But your committee can see no objection to the naming of an advisory board, whose endorsement of any paper and whose certificate of educational and moral status may be considered sufficient, and it therefore recommends that not more than three qualified persons, resident in each of the principal countries of Europe, be appointed as an advisory board, to whom students from abroad may present their certificates of qualification and moral character for endorsement, or to whom the papers of students from abroad concerning which there is doubt or uncertainty, may be referred for authentication and approval. Your committee was advised that this matter would be brought before the American Dental Society of Europe, at its meeting in London, August 1st, and that the chairman would be apprised of any action there taken.*

* Since this report was presented and adopted the chairman of the committee has received an abstract of the proceedings, in which was recommended the very action taken by the National Association of Dental Faculties at its late annual meeting.

(To be concluded.)

Resolutions Adopted by the National Dental Association at the Annual Session of 1898, and Other Miscellaneous Items.

RESOLUTION adopted by Executive Committee and National Dental Association in regard to the proposed amendment to the patent law.

WHEREAS, The Supreme Court having already declared all such patents as are contemplated in this move to amend the patent law invalid, which makes all such amendments unnecessary, and

WHEREAS, The constant agitation of the question is detrimental to the best interests of organization in existence, be it

Resolved, That the National Dental Association, now in session, disapproves of any further work in this direction, and recommends that the whole question be dropped as unwise and unnecessary.

The following resolutions were offered by Dr. C. L. Goddard in relation to the appointment of Dental Surgeons to the Army and Navy :

Resolved, That this Association approves and endorses the movement for the appointment of dentists in the Army.

Resolved, That a committee of five be appointed by the President to represent this Association in procuring from Congress the necessary legislation.

The resolutions were referred to the Executive Committee, which, at a later session reported as follows :

WHEREAS, The National Dental Association has appointed a committee to take charge of and have full control of the subject of legislation concerning the employment of Dental Surgeons in the Army and Navy.

Resolved, That this Association deprecates any independent action on the part of State and local societies or individuals without the approval of said committee. Adopted.

The Committee on the President's Address having recommended the adoption of a Code of Ethics, the chair appointed Drs. H. A. Smith, Frank Holland and H. W. Morgan a committee to formulate a Code of Ethics for this Association.

The Committee on National Museum and Library reported

that having visited the institution in the interests of the Association, they had been cordially received, finding the officials interested in the work and expressing a willingness to do their utmost to build up the dental sections. A highly creditable amount of work in securing specimens has been accomplished, while the library contains the best and most complete collection of dental literature in the world. But few men in the profession appreciate this great work in elevating dentistry in the estimation of scientific men.

The recommendation of Surgeon-General George M. Sternburg endorsed by the Secretary of War, for the employment of a Dental Pathologist passed the Senate, but failed in committee of conference. The recommendation will, however, be renewed and submitted to Congress at its next session.

CHAIRMEN AND SECRETARIES OF SECTIONS.

- Sec. I. I. N. Broomell, Chairman; Wm. E. Walker, Sec'y.
- Sec. II. S. H. Guilford, Chairman; M. F. Finley, Sec'y.
- Sec. III. J. Y. Crawford, Chairman; Frank Holland, Sec'y.
- Sec. IV. T. L. James, Chairman; L. L. Dunbar, Sec'y.
- Sec. V. J. S. Cassidy, Chairman; A. W. Harlan, Sec'y.
- Sec. VI. J. D. Patterson, Chairman; L. E. Custer, Sec'y.
- Sec. VII. W. C. Barrett, Chairman; W. F. Lewis, Sec'y.
- Sec. VIII. J. Taft, Chairman; H. R. McFadden, Sec'y.
- Sec. IX. V. H. Jackson, Chairman; C. L. Goddard, Sec'y.
- Sec. X. H. J. McKellops, Chairman; M. B. Culver, Sec'y.

Dr. A. W. Harlan offered the following standing resolutions, which were unanimously adopted:

Resolved, The Secretaries of Sections are required to forward to the Chairman of the Executive Committee—sixty days before the annual meeting—the titles of papers to be submitted, with the names of the authors, in order that they may appear on the official program.

Resolved, The Executive Committee shall prepare and mail to the members an official program, at least twenty days before the annual meeting. This program shall have a list of the hotels, the place of meeting and the railway and steamboat facilities for getting to the place of meeting from the principal points in the United States. This notice shall be mailed to the journals at least one month before the annual meeting.

Dr. Molyneaux offered the following :

Resolved, That a committee of three be appointed who shall prepare amendments to our Constitution, providing for an Executive Council, to whom all miscellaneous business shall be submitted without discussion, before final action is taken.

This resolution was adopted.

Dr. Cassidy offered as a standing resolution, which was adopted :

Resolved, That the out going President be a member of the Executive Committee.

The Chair appointed as the other two members of the Executive Council for the coming year, Drs. Grant Molyneaux and John S. Marshall.

The Executive Committee appointed Dr. L. E. Custer, of Dayton, Ohio, to deliver a general address on "Electricity," and Drs. T. W. Brophy and Thomas Fillebrown to deliver addresses on "The Surgical Treatment of Cleft Palate."

Publication Committee: C. N. Johnson, Chicago; C. N. Peirce, Philadelphia.

Committee on National Museum: Williams Donnally, Washington City; Henry W. Morgan, Nashville; John S. Marshall, Chicago.

AMENDMENTS TO THE CONSTITUTION.

The proposed amendments to the Constitution, laid over from last year, (1) by Dr. J. Y. Crawford, to change the name of the Association to "The American Association of Dental Surgeons"; (2) by Dr. S. H. Guilford, to change the name to "The American Association of Dental Science," and (3) by Dr. Stellwagen to "The American Stomatological Association," were all tabled.

The following amendments proposed by Dr. M. F. Finley, lay over for one session, and were then unanimously adopted :

Amend Sec. 1, Art. IV., by inserting after the third word in the first line, "and the names of the Territories enumerated in Sec. 3, Art. XII."

Amend Sec. 3, Art. III., by inserting after the first word of the third line, "and Territorial."

The following amendment offered by Dr. H. J. Burkhart, lay over one session, and was then unanimously adopted :

Amend Article IV., second paragraph of Sec. 3, to read, "commencing with 1897 the President shall be chosen from the division in which the next meeting is to be held."

The following amendments embodying the suggestions in the President's Address and recommended by the committee on the address, were read by Dr. H. W. Morgan, but were not acted upon :

Article VI. shall be amended so as to read, "the President shall be chosen from the division in which the next annual meeting is to be held."

Article III., Sec. 3, shall be changed so as to read as follows : "They shall be chosen in any manner that their Association may see proper."

In Article IV., Sec. 1, the word ten shall be changed so as to read six.

The following amendments offered by Dr. Laurence Leonard, lie over for one year :

Resolved, That Art. V. be amended by adding after the word dollars, "the receipt for which will entitle the holder to all the privileges of the floor, including general meetings of the Executive Committee."

Art. VIII., Sec. 1 after the words, "Association to whom," add "and before whom all business matters shall come."

Art. VIII., create Sec. 10. The Executive Committee shall elect a president and secretary, and shall hold daily general sessions during the meeting of the Association.

Create Article XV. as follows : Section 1. After 1899 nothing shall come before the general sessions of the Association except the President's Address, Announcements, Election of Officers, selection of place of meeting, and the reading and discussion of scientific papers endorsed by the Sections.

Sec. 2. Anything in conflict with this article is hereby repealed.

A communication was received from the Northern Illinois Dental Society reporting the adoption by that body of resolutions looking toward a remedy for the existing evils regarding the Inter-State practice of dentistry, and requesting the National Dental Association to work in securing such modifications of the dental laws of the various States as shall enable competent practitioners to remove from one State to another without being com-

pelled to submit to provisions which are eminently unfair to large numbers of capable dentists.

The committee was referred to Section II.

ALL SORTS.

Removal of the Dental Pulp.

If after the pulp is destroyed by arsenic it is carefully and entirely removed, some antiseptic being used in connection with the operation, and the root immediately and very thoroughly filled, the filling so placed as not to irritate or cause inflammation, there will be an absence of any pericemental disturbance or abscess.

We believe one fertile source of trouble is the use of gutta-percha for root-filling, both the dissolved and the points which are now so generally used and which are apt to cause irritation at the end of the root. The disturbance from the use of gutta-percha is due to two causes—forcing air ahead of the filling, which is not allowed to escape because of the plasticity of the gutta-percha, and forcing particles of the gutta-percha through the apex. We have heard of methods of procedure with this material described, evidence that it had gone to place being indicated by a slight pain felt by the patient, when in reality the compressed air will produce an equally disturbing symptom, and so much evidence is entirely worthless.

We have also seen acute inflammation caused by the air forced ahead of the gutta-percha, the trouble dating from the time when the filling was first inserted, and when evidence that something had gone to the end was distinctly given by the patient. A careful examination afterward revealed the fact that the gutta-percha had not reached to within one-quarter of the end of the canal. In other cases we have had positive proof that the operation of filling had been so thorough that some of the gutta-percha went through the end of the root, and the tooth thus treated had been a constant source of trouble from no other cause than the irritation of this material protruding through the apical foramen.—*From an Editorial in Dental Digest.*

A Study of Eucaïn "B" in Stomatology.

The results recently obtained with Eucaïn "B" in general surgery by Dr. Reclus, and communicated to the Academy of Medicine at its ses-

sion of March 29th of this year, have led me to make important modifications in the use of that drug in stomatological work.

Instead of the 1% I employ a 2% solution; this is absolutely free from danger, and permits operation to be undertaken very quickly. Analgesia sets in immediately, and there is no necessity of waiting for five minutes, as is the case of the weaker solution. This no slight advantage for the patient.

Further, we can operate in the upright position without the least fear of trouble, and we can allow our patient to walk out immediately after the work is done, which is not possible with cocain.

The following points seem to me to be important enough to attract the attention of stomatologists:

Without going into the technique that is to be followed in order to obtain proper analgesia, I will say that the injection of 1 cubic centimeter (17 minims) *i. e.*, 2 centigrams or $\frac{1}{3}$ grain of Eucaïn "B" is sufficient in the majority of cases to permit the extraction of a large sized molar without the patient suffering any pain. If this dose should appear insufficient, there need be no hesitation in injecting a larger quantity of the anesthetic solution. Immediately after the injection is made the forceps can be taken and the tooth removed. Dr. Dumont and I have operated over sixty times by this method, and our patients have never experienced any pain.

To study any post-operative troubles that might appear, our patients were made to walk up and down in the yard of the hospital (la Pitië) immediately after the operation for from five to eight minutes at a moderate gait; then they are taken into the office and examined. We have never been able to find any change in their general condition, nor have we ever found them to show any anxiety and pallor which is seen after cocain, and more especially after holocain.

Our observations were made upon patients of both sexes and of all ages.

Thus, in a child of 12 years we extracted the second great molar of the left side of the lower jaw, after having injected into both sides of the tooth $\frac{1}{4}$ cubic centimeter (4 minims) of the 2% solution of Eucaïn "B". The anesthesia was perfect, and no trouble followed the operation.

We have done extractions upon hysterical women and nervous men without the occurrence of anything abnormal.

In one young man, 22 years of age, we removed four roots at one sitting. Analgesia was obtained by injecting two syringefuls of the 2% solution, about 4 centigrams ($\frac{2}{3}$ grain) of Eucaïn. The patient, though seated, experienced no discomfort, and felt none after he had taken the short walk that we prescribed.

For the above reasons I agree with Dr. Dumont in considering Eucaïn "B" in 2% solution, as the anesthetic of choice in stomatology.
—DR. A. LEGRAND in *Revue de Therapeutique*.

New Points in Manipulation of Tin and Gold.

The other day, in a clinic before the Odontological Society, Dr. Shumway demonstrated several new points. In the first place, he annealed tin over mica, nearly to the point of its melting, and packed it into the bottom in the usual way. That tin had the appearance of being a solid piece, and any one seeing the operation must have felt at once that the heat used had much to do with the solid condition obtained. He seemed to punch it into the cavity very easily without any effort, and as soon as an ivory point was rubbed over it there came out a beautiful surface; then a little flat piece of cohesive gold gently touched with the ivory point was run back and forth. The gold was brought into adhesion to the tin. If that style of filling teeth could come into vogue, I think we could feel that we were artists. It is very far removed from the blacksmith's sledge-hammer method of hammering gold.—S. G. PERRY in *International Dental Journal*.

Bridge Attachments to Teeth with Living Pulp.

Dr. Wassall's method is as follows: The bicuspid, cuspid, lateral or central, is prepared with double compound cavities having parallel and perpendicular walls; a flat base and no undercuts. Sufficient of the lingual cusp of the bicuspid and the nodules of the anterior teeth is removed to allow the gold covering to intervene in occlusion. Mesial and distal surfaces are ground as nearly perpendicular as is consistent with good looks and a perfect impression.

Impressions in gutta-percha are obtained and dies made of Mellotte's metal. On this die 120 rolled gold-foil is burnished over the lingual proximal or cutting edge as the case demands. The edges proximally extend no further buccally or labially than can be thoroughly cleansed by brushing. When adaptation is perfect the foil is waxed, removed and invested in plaster and silic. Thirty gauge clasp metal is sweated bit by bit until the whole surface of the foil is covered. Where the edges do not perfectly unite twenty carat solder may be used to advantage.

Bridges constructed in this manner are assembled in the usual way. For this method it is claimed great strength, perfect adaptation, cleanliness and the exhibition of but little gold. Much skill was manifested in the entire work.—*Dental Review*.

Method of Making Solid Platinum Cusps.

Even the best of us are forced at times to do a little grinding of the cusps to relieve some little peculiarity of articulation which could not be foreseen.

For a number of years the writer has used solid cusps, so that this might be done without danger of cutting through the metal cusps and exposing the cement, as would be the case if a shell cusp were used.

There is the same good reason for using solid platinum cusps, if platinum shell crowns are made use of.

They may be constructed by first swaging a platinum shell cusp, and then swaging platinum sponge or foil into it until it is filled, then soldering it together with gold or platinum solder, ten per cent., carrying it to a high heat.—J. E. NYMAN, *Review*.

Treatment of Hemorrhage after Extraction.

The treatment of alveolar hemorrhage, as suggested by Ritter, has given us, with some alterations, universal satisfaction. The tooth socket is forcibly syringed with hot water and iodoform gauze cut in strips and rolled in tannic acid is tightly plugged in each *single alveolus* up to the gingival border. This careful plugging is of the utmost importance for complete success of the operation. A little softened modeling compound is then well pressed over the plug, the jaws are closed, the compound removed, chilled and replaced, and a bandage applied about the head for keeping the splint in place. This is kept undisturbed for about two days, the splint keeping the teeth far enough apart to introduce liquid food. After removing the compound and plug the parts are painted with astringent solution. In a case of emergency we were forced to use the actual cautery. Not having a galvanic apparatus at hand, a ball-shaped amalgam burnisher was heated to dull redness and the socket of the empty alveolus slightly touched about twelve or fifteen times. The hemorrhage stopped at once. Seemingly the pain produced by the hot iron is much less than we should expect it to be.

For internal medications small repeated doses of sugar of lead and opium in combination are very useful; fluid extract of ergot, aromatic sulphuric acid, etc., may also be suggested. The patient should assume an erect position, be kept away from all excitement, and diet himself. Lemonade and ice-water are useful for quenching the thirst, but under no circumstances should alcoholic liquids be given, as they increase the blood pressure.

A great factor on the part of the dentist himself is to preserve abso-

lute coolness; this will aid him to master the situation at once and to gain the confidence of the patient, a material help in accomplishing his task.—H. PRINZ, *Dental Digest*.

How to Take a Partial Impression when the Teeth Converge or Diverge.

First take an impression in wax and make a model from it. Then soften and mold pieces of Ideal base-plate material upon the alveolar ridge of the model between the converging teeth, and use them for impression trays. Place upon them plaster of Paris, and put them in the mouth in their respective positions, and after the plaster has hardened and before removing take another impression in modeling compound. Now remove the modeling compound first, and then the base-plate impression; they will come from the mouth separately. Place them together so that they will sustain the same relation that they had in the mouth. Make a model from this combination, and it will be as perfect a representation of the parts as will be required.—F. W. BLISS, *Pacific Medico-Dent. Gaz.*

Swelling of Submaxillary Glands, due to the Pressure of a Lower Denture.

After wearing it for a few weeks patient noticed a swelling had formed under both the angles of the lower jaw. The swellings came somewhat suddenly, and they increased markedly in size after meals. She was advised to leave out the plate. This she did, and the swellings completely disappeared. She tried several times after this to wear the plate, but always with the same result—a return of both the lumps.

I asked her to wear the plate for a few hours before coming to see me. This she did, and I found the swellings above referred to, they occupied the region of the superficial portion of the submaxillary glands, had a defined margin, but were quite soft to touch and compressible. There was no sore place in the mouth, but the lower margin of the plate, in the bicuspid region, obviously reached down to the floor of the mouth.

Here I may note that the patient is very thin and has small bones. The depth of the body of mandible being less than usual and a finger placed on the floor of the mouth can readily feel one placed over the mylohyoid muscles, the thickness of tissue between the two fingers being very slight. I cut away freely the lower margin of the plate which, since then, she has worn without any return of the swellings.

There is no doubt in my mind that the swellings were due to the plate pressing on Wharton's duct, so impeding the flow of saliva from the submaxillary glands. That the lumps were due to the salivary glands becoming swollen is more or less proved by the fact that they became markedly larger after meals, and a glance at the course pursued by Wharton's duct showed this to be the case.—W. H. DOLAMOR, *Dental Record*.

Tin-Foil Matrices.

Oxy-phosphate fillings are a necessity in daily practice, and as it is not always advisable to use the rubber-dam in the case of irritable or very young patients, some other means of excluding moisture must be sought. During the past ten years I have been able to keep such fillings moisture proof, during the progress of the chemical union that causes consolidation of the filling in the tooth cavity, by the aid of pieces of tin-foil.

The cavity in the tooth is prepared in a suitable manner, and the margins properly shaped. The tooth cavity is filled with absorbent cotton carefully packed into it, after the use of the warm air syringe.

A piece of tin-foil of suitable thickness is cut out, measuring one inch or one inch and one-half square, and placed in readiness. The filling is carefully mixed into a pasty mass. The cotton wool is removed, and the plastic filling gently packed into every part of the cavity.

Some of the overplus of the filling left on the mixing slab, is placed on the piece of tin-foil. The tin-foil is quickly placed over the tooth and the cavity, and folded over the lingual and buccal surface, or the palatal or buccal surface as the case may be.

The tin-foil is *gently* brought into position with the forefinger and the thumb, or with the forefingers of the right and left hand.

A stroking action of a right hand finger, while the left index finger holds the tin-foil in position, within or without the dental arch, will enable the filling to be solidly pressed into place in the cavity of the tooth.

The excess of material is thus squeezed over the teeth, and the tin-foil can then be gently burnished over the filling, so as to make a contour suitable to the case.

In the case of bicuspid and molars, the patient can supplement the procedures of the dentist, by steadily closing the bite on the tin-foil, and thus give the dentist a true contour of the masticating surface.

In many cases where approximal cavities in incisors have to be filled, the tin-foil can be folded double, and passed between the teeth,

before the filling is placed in the cavity. This flexible band of metal can be gently drawn into place *around* the tooth, and thus cemented on the enamel surface on each side of the cavity, so that the moisture is completely excluded during the setting of the filling.

Once the filling sets hard, the tin-foil can be peeled or scraped off the tooth or teeth, and the dentist will find if these details have been skilfully and gently carried out a well contoured filling with a smooth surface, that needs very little trimming.

TIN-FOIL MATRIX WITH OXY-PHOSPHATE.

Sometimes I place a band of tin-foil around a tooth, and then pack in the oxy-phosphate filling. The band is brought to its intended place, and I then envelop tooth and band with a square piece of tin-foil smeared with the filling.

This is rubbed or folded into shape and position, and all moisture is excluded. With young children tin-foil used in this way, will be found of great service to the dentist, as it does not give them any pain or discomfort; while at the same time the filling is kept protected from the action of the saliva during the progress of setting.

I am of opinion that oxy-phosphate fillings treated in this way, will be found to be harder and more durable under ordinary conditions than when the plastic mass is packed and burnished into position, and contoured with oiled instruments.—W. B. PEARSALL, in *Items of Interest*.

BRIEFS.

Add Potassium Sulphate to Investing Plaster.—Plaster investments, with potassium sulphate added, stand high temperature with less cracking than investments without it.—*J. E. Nyman, Review.*

A Quick Method of Making Temporary Crowns.—Dr. J. H. Kennerly uses an ordinary rubber tooth, to which is soldered a wire, the crown being contoured and retained by means of gutta-percha.—*Dental Digest.*

The Size of the Band.—In nearly all cases dentists doing porcelain work make the mistake of making the bands too wide. I use the very narrowest possible band that I can make.—*G. W. Schwartz, Dental Review.*

Home-made Mouldine.—Buy a brick of fine clay (get before sand has been added); pulverize it to a flour, then mix with glycerin to the

proper consistency. This will make five dollars' worth of mouldine.—*S. Ewing Smith, Dental Weekly.*

Burnishing Teeth for Sensitiveness.—Dr. Holt, of Goldsboro, North Carolina, recommends this practice very highly for sensitiveness at the cervical portion of the teeth: Dry the tooth, heat the burnisher quite hot and burnish the sensitive part.—*Dental Weekly.*

To Remove Rust from Instruments.—Dip them into fatty oil and after a few days rub them off with a cloth moistened with ammonia; should still any rust remain, wash with diluted muriatic acid and polish with fine rotten-stone.—*Dr. Wm. Lombardino, Berlin, in Dental Weekly.*

Frosted Aluminum Plates.—First apply a saturated solution or caustic soda slightly warmed, then nitric acid. This leaves the surface clear and slightly granular. Plates so treated remain cleaner in the mouth and present a very attractive appearance.—*J. D. Pfeifer, Dental Review.*

To Lessen Danger of Cracking in Working Porcelain.—Teeth should be coated with shellac, which, under high temperature, forms a protecting film of carbon upon the facings, preventing etching by the silex in the investment, and lessening the danger of cracking.—*J. E. Nyman, Review.*

A Good Equipment Desirable.—We cannot be too up-to-date in our equipment, though our buying should be attended with conservatism lest we fall an easy prey in the purchase of articles which are inferior in their class and ill-adapted to the purpose for which they are designed.—*H. C. Kahlo, Ind. Dental Journal.*

Length of Posts.—If the length of the post from the cap to the end of the post is equal to the distance between the cap and the tip of the highest cusp of the crown, the post is of sufficient length to withstand any strain, as there will be no chance for a leverage to be exerted in stress upon it.—*J. E. Nyman, Review.*

Exclude Parents from Operating-Room.—They spoil authority. The child is not to be controlled, but looks to the parent for sympathy, and will not make an effort to control himself. After the dentist has obtained the confidence of the child he can do most anything, so long as he does not deceive.—*H. L. Belcher, International.*

Investments should Never come in Contact with Water after they have Hardened.—Do not boil out the wax. Soften with dry heat, pick out with instruments, and dissolve out the residue with chloroform. There will be less shrinkage and cracking under high heat when treated in this manner.—*J. E. Nyman, Review.*

More in the Occlusion than Finish.—It is well to pay more attention to the arrangement of the teeth than to the finish of the plate. A poorly polished plate may be worn with entire comfort, provided the teeth are properly arranged. But no matter how highly polished the plate may be, it can never compensate for well occluded teeth.—*A. in Dental Weekly.*

To Prevent Recurrence of Decay.—No tooth may be considered safe from recurrence of decay around approximal fillings unless the cervical wall has been carried sufficiently rootwise to bring that portion of the filling under the gum, and the cervico-labial and cervico-lingual angles have been extended to a point where these margins of the filling are kept clean by friction.—*C. N. Johnson, Cosmos.*

To Prepare Gold and Tin for Cohesive Working take a whole or half sheet of gold foil and anneal on mica, do the same with a half or quarter leaf of tin and anneal carefully in proportion to the degree of heat the tin will bear without melting, then fold the tin strip inside the leaf of gold foil so that the gold completely envelops the tin to an equal thickness on both sides.—*Dr. A. G. Weber, Cosmos.*

A Method of Making Dies Without Sand, by Dr. J. P. Palmer, Chicago.—Prepare the mold in the usual way and give one coat of shellac, oil the surface, wipe off all excess. Then mix equal parts of fiber asbestos and plaster, take impression of model as high as plaster is intended to go, remove the model from the impression before the plaster is very hard, and dry out over a gas burner for one and one-half hours, then pour the metal into hot mold.—*Dental Review.*

Whenever it Becomes Necessary for a Filling to Show at all it should be Extended Labially, so as to show distinctly. The reason for this is that where gold is placed between teeth in such a way that it is in the shadow, the appearance a few feet distant from the patient is that of a black mass simulating decay, while if the filling is carried out sufficiently to allow the rays of light to reflect upon it the bright yellow tinge of gold is immediately perceptible.—*C. N. Johnson, Cosmos.*

Methods of Hiding Slight Cracks in Porcelain Facings.—By some misfortune a slight crack may occur in a porcelain facing, and, while causing no weakness in the case, may be extremely unsightly; this can be perfectly and permanently hidden by simply immersing the case for fifteen minutes in liquid albolene. Upon taking it out, washing and drying it, the crack cannot be detected, and, under the moist condition of the mouth, it will never make its reappearance.—*J. E. Nyman, Review.*

Restoring Enamel Surface to Porcelain Facings after Grinding.—It is sometimes necessary, to obtain artistic effects, to grind the buccal surface of a porcelain facing. The enamel surface may be restored to a facing so ground by painting the surface with a thick solution of borax and water, and then heating the facing to the melting point of gold, or by painting the surface with liquid silex, letting it dry and then heating it to a point half way between the fusing point of gold and that of Close's body.—*J. E. Nyman, Review.*

Oil of Cloves, for general use in the treatment of pulpless teeth, is certainly one of the best agents at our command. It possesses the property of destroying or rendering inert septic and infectious material. In cases of apical pericementitis it is perhaps the best agent that can be used. It possesses local anesthetic properties in a marked degree, and, like some of the other agents, because of this fact, serves to reduce the inflammation in the tissues in the apical space and causes them to return to a normal healthy condition.—*A. H. Peck, Dental Review.*

Setting of Crowns.—Dr. Taggart fits gutta-percha onto the post and in the root and gets a proper adaptation first; then he dries the roots out and paints the inside of the canal with cajeput or eucalyptus; then he lets that dry a little and paints the inside of that with chloro-percha; then he paints the gutta-percha on the post with chloro-percha, warms it a little and drives it home. They have this advantage: They are not set solidly as they are with cement, and possibly the gutta-percha preventing a fracture of the porcelain.—*Dental Review.*

Clasps.—Regarding clasps, it is my opinion that they are all dangerous to a degree as to the welfare of the tooth which they encircle. Clasps should be made as accurate as possible and as narrow as possible. No matter how well fitted, a slight friction must prevail, owing to the unstability of any partial plate excepting when such plate is fastened by partial caps upon bicuspid or molars. Time will destroy any clasp tooth, and it is for this reason probably that Dr. Freeman has advocated the crowning of all teeth to be clasped.—*R. H. Hofheinz, Cosmos.*

Method of Quickly Filling Large Cavities.—Place in the cavity a piece of gold foil, No. 6 or 10, large enough to overlap the cavity edges when forced against the bottom of the cavity. Place within this a piece of lead large enough to fill the cavity two-thirds full. With a plugger condense the lead, spreading it against the walls of the cavity, causing the gold to conform perfectly. Next turn in the over-lapping gold, thus covering the lead and presenting a gold surface. Complete the filling as though gold had been used throughout.—*Dr. Cochran, Items.*

Partial Crowning Instead of Clasping Teeth.—I do not believe there is any clasp that will not in time ruin a tooth that is unprotected. My method is to use partial crowning instead of partial clasping. I make a permanent partial crown from the second bicuspid or molar, and upon that I make the removable crown (which is not my own device), and over that a vulcanite plate. That not only prevents chemical abrasion or mechanical abrasion, but it prevents the plate from infringing on the soft tissues, preserving at all times correct articulation with the upper denture.—*Dr. Hofheinz, Cosmos.*

How to Set Crowns and Bridges so that they may be Readily Removed.—The post (which should be unnotched and tapered) and the underside of the cap is coated with a film of thin sandarac varnish; this is allowed to thoroughly harden and the crown is then set with cement as usual.

This thin film of varnish while in no wise lessening the security of attachment, upon heating, softens and breaks the adhesion of the post and with the cement, allowing the crown or bridge to be readily removed.—*J. E. Nyman, Review.*

Protective Coating for Cavities in Teeth.—Amalgam should never be placed over the pulp of a tooth without having the bottom of the cavity lined. In deep cavities the best protection is a thin layer of chloro-percha. For shallow cavities I prefer a coating of shellac or sandarach varnish to coat cavities, using a layer of paper cut out to conform to the size of the cavity, placing this in the bottom over the pulp.

By using these precautions we eliminate almost entirely all danger from thermal shock, and if a filling has to be removed, the discoloration is not so great.—*A. L. Ott in Items.*

Clasp Plates.—When a resort has to be made to clasps, either in gold, silver, or vulcanite work, for the steadying, retention, or greater stability of artificial teeth, I often find it is better to crown with gold the tooth thus used, as the action of the clasp, either by wear or by the deposition of food held next the tooth, causing decay, or from whatever other cause, destroys these teeth so quickly that something of this kind should be done for the benefit of the patient, and to prevent the loss of such teeth made very valuable for the support they give to the denture.—*T. F. Chupein, Office and Laboratory.*

Are We Justified in Consuming from Ten to Twenty Minutes or even Thirty Minutes by the Results Obtained by Cataphoresis?—In answer to this I should say, in most all cases, yes. Should we fail utterly in obtaining the desired anesthesia, and this seldom occurs, we have proven to our patient that we have tried conscientiously and in

the most approved manner, and the effect of that quietude which is established during the administration of our anesthetic is often sufficient to put a patient in a calmer state, and hence better able to withstand the necessary pain.—*H. C. Kahlo, Ind. Dental Journal.*

Roots and Bridges.—In cases of very frail roots, you will find that when they are well cleansed mechanically of the accretions which have collected on them they will be held together by bridge-work. All roots not parallel should be ground and every bit of enamel carved off at the cervical margin, so that the crown, instead of hugging the body of the tooth, will be cone-shaped, and then the harder you drive it the tighter it clings. Ordinary teeth have a more offensive odor than a well-adapted bridge, for there is more secretion and more foreign particles work into the interstices.—*C. L. Hungerford in Dental Digest.*

Some Causes of Failure in Fillings.—I believe a large proportion of failures at this time are due to the extravagant use of matrices and supporters, rubber-dams, ligatures, and everything else that go to make up the filling of the present time. I think the dentist, as he leaves a filling, pays very little attention to subsequent results, and that a large proportion of cases of pyorrhea have their origin in the operator himself. The gingival margins are left in a state of irritation which develops into inflammation and pyorrhea. Cracks can be made by over-malleting, and when made at the cervix invite decay.—*Jas. Truman, International Jour.*

A Novel Method of Treating Erosion of the Teeth.—Dr. A. C. Hewitt, of Chicago, brought a patient to our office recently where every tooth (28) had an eroded surface, labially and lingually. These were all covered with gold crowns about four years ago. All of the anterior teeth were so covered that their faces were exposed by cutting out the gold so that the patient (a lady) would not be disfigured when she opened her mouth. The case is a complete success. A slight erosion is beginning again on two of the faces, so that it appears that the same agencies are at work again. The case was the most striking we have ever seen.—*Dental Review.*

Tippling Teeth.—A little practice that has been successful in my hands is in tipping teeth. I do hate to destroy live pulps, and where I find both corners are gone and the tooth very frail, I grind the surface, beveling from the neck of the tooth down to the cutting-edge of the tooth on both sides. I grind off a little to the cutting-edge, then use thin gold foil and burnish that to the tooth on three surfaces, stiffen it with solder of 22-carat plate, solder it, and again grind and cement that in place.

It looks very well, can hardly be detected from gold filling, and you have an edge that will protect the frail edges of enamel. It is only necessary to break away very little of the frail edge. You can burnish the gold over the frail edges with any amount of assurance, and as long as it stays there it will protect the edges of the enamel.—*M. S. Smith, Cosmos.*

New Publications.

ORTHODONTIA OR MALPOSITION OF THE HUMAN TEETH; ITS PREVENTION AND REMEDY. By S. H. Guilford, A.M., D.D.S., PH.D., Professor of Operative and Prosthetic Dentistry and Dean of the Philadelphia Dental College; author of "Nitrous Oxide," etc. Third edition, revised and enlarged. Philadelphia: Published by the author.

This work has met with great favor and is well known to all. Many changes and improvements, however, have been made in the new edition. In fact the book has been largely rewritten, much of the material contained in former editions, which has ceased to be of value, has been excluded and its place supplied by newer material and methods. The book has been increased in size to 254 pages, and fifty new illustrations have been added. The general text has been changed to conform to present knowledge, and three new chapters have been introduced. One of these, "Dynamics of Tooth Movement," particularly adds to the value of the book.

The author's aim has been to lead the student step by step from the simplest beginnings to the more complicated and difficult work of practical treatment, and he seems to have fulfilled it.

A DICTIONARY OF DENTAL SCIENCE. By Chapin A. Harris, M.D., D.D.S. Sixth edition, revised and enlarged by F. J. S. Gorgas, M.D., D.D.S., Baltimore. Philadelphia: P. Blakiston's Son & Co. Price, cloth, \$5.00.

Harris' Dental Dictionary is well known to the profession. It is, in fact, the only dental dictionary that has been given to us. The book is revised and enlarged, the additions consisting of definitions and descriptions of all the latest terms and phrases

which pertain to the dentistry of the present day, and also those of collateral sciences. Among the additions may be found definitions of all forms of micro-organisms found in the mouth, electric units, words and phrases, operations into which electricity has been introduced, as, electro-therapy or electro-motive power. The editor has also referred to all new terms, methods, and materials introduced into dentistry during the past few years. It is an excellent work, but were it made a pronouncing dictionary its value would be increased.

SOCIETIES.

Ohio State Board of Dental Examiners.

THE next meeting of the Ohio State Board of Dental Examiners will be held at the Neil House, Columbus, beginning Tuesday, November 29th, 1898. All applicants for examination should apply to the secretary for application blanks.

L. P. BETHEL, *Secretary*,
Kent, Ohio.

Ohio State Dental Society.

THE regular annual meeting of the Ohio State Dental Society will be held in Columbus on the first Tuesday of December next.

The indications are that the meeting will be one of great importance and interest to every progressive dentist in the State, and it is greatly desired that there be as large an attendance as possible.

Each year these State meetings are becoming of more and more importance. This is true because of the progress the profession is making, and because of the reorganization of the National Association. This body is moving forward in its work, and it is desirable that the State societies which are auxiliary to it keep abreast with it.

The Executive Committee give good assurance that there will be much important work for the society. Quite a number of

papers are already promised, and the indications are that business matters of great interest will be presented and call for action. Now, we suggest that every member of the society, and every member of the profession in the State, who has real interest in his profession will be present at that time and that each will be prepared to make some contribution that will add to the interest of the occasion.

A good program is being arranged. Let every one then, from this time forward, so arrange his business matters as to enable him, without fail, to attend the meeting.

International Dental Congress Committee.

AT the National Dental Association Dr. A. W. Harlan, Chicago, offered the following:

WHEREAS, It is well known that an International Exposition will be held in Paris during the summer of 1900; and

WHEREAS, Provision has been made for the holding of an International Dental Congress in Paris, and committees have already been appointed to organize such a congress, and it is the wish of said committees that the National Dental Association appoint a committee to co-operate with these committees in making the congress a success; Therefore,

Be it Resolved, That a general committee of fifteen be appointed by the president to co-operate with the general committee in Paris. Such committee to have power to add to its number, not exceeding twenty-five names in the United States, and that said committee, when organized, be empowered to adopt rules and regulations such as will insure the success of the congress. The present president and vice-presidents of this body shall be members of this committee. After this committee has organized, by the selection of a chairman and secretary, its acts shall be final, and after the close of the congress said committee shall present a report of its work to this association.

The resolutions were adopted unanimously, and the following were announced as the members of the committee:

A. W. Harlan, Chicago; A. H. Fuller, St. Louis; H. J. McKellops, St. Louis; J. Taft, Cincinnati; H. A. Smith, Cincinnati; W. W. Walker, New York city; James McManus, Hartford, Conn.; W. C. Barrett, Buffalo; T. W. Brophy, Chicago; B. Holly Smith, Baltimore; W. E. Griswold, Denver; C. L. Goddard, San Francisco; L. L. Dunbar, San Francisco; Henry W. Morgan, Nashville, Tenn.; Frank Holland, Atlanta, Ga.; Edward C. Kirk, Philadelphia; Thos. E. Weeks, Minneapolis.

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CONTRIBUTIONS.

Less Crown Work and More Good Fillings.*

BY W. H. HAINES, D.D.S., ALLEGHENY, PA.

WHEN the subject "Less Crown Work and more good Fillings," was assigned to me by your committee, it was not the intention, I am quite sure, to deprecate the use of the crown, or in any way to cry down the use of such a practical and useful piece of work, and place in a less prominent and deserving position its merits and value as the means of restoring the use and beauty of our broken down molars, caused by decay or accident, which is so common in this generation; but rather to emphatically protest against its use in the covering of teeth showing only slight defects in the way of small cavities, minor accidents, or abrasions. Assuming that our patients come to see us with implicit confidence in our ability, it should be our aim always to give them the benefit of our best judgment as to whether it is best to resort to a crown, or repair by placing a good filling or inlay in the cavity; and we should not for an instant be influenced by the thought that by placing a gold crown over the tooth rather than by filling, the work will be materially lessened and the fee proportionately larger; arguing, that as perhaps the party

* Read before the Odontological Society, Western Pa., Sharon, Pa., June 9, 1898.

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can well afford to pay for it, why should we not get the largest possible fee; eliminating altogether thoughts of a mercenary nature, and keeping in view always that which will give the best results and comfort to the patient and redound to the credit of the operator.

I think if we could but examine some of the "headlights" daily seen in the mouths of people whom we meet, we would all say, "Less crown work and more good fillings." When a tooth has been crowned, instead of placing a good filling therein, you will find in almost every case that it is a gold crown; the reason being that it is so easy to slip on a "ready-made" crown; almost as easy and less trouble than to slip into a "ready-made" suit of clothes.

We will give only three instances in our experience (whereas I could give them by the dozen), where it would have been much better for the patient and infinitely more to the credit of the operator, had the tooth been properly filled instead of crowned. I am certainly a firm believer in the crowning of roots, but when it comes to placing a crown over a crown, it is then time to say less crown work.

The first case which I will mention is where a plate was to be replaced by a bridge. Upon the first bi-cuspid was a gold crown; the gum was inflamed and swollen, and, upon examination, I found so much space between the crown and the root, that the natural inference was that the root was badly decayed. Upon removing the crown, you can readily imagine my surprise and contempt to find two small approximal cavities, which I immediately filled. Within a few days the inflammation and swelling disappeared entirely. A day or two since, I had an opportunity to examine the tooth and found it in good condition in every respect.

The second case to which I will refer, came to me at the instance of one of my patients. The question asked me was: "Doctor, is it possible to have a white tooth put in instead of this gold tooth? I am disgusted with the ugly thing!" It was not necessary to ask the patient to indicate the offending member, for the first thing I saw when she came into the office, was the "headlight" on the right central. My reply was, "Yes; I think I can insert a 'white tooth' for you; but will have to remove the gold crown in order to examine the condition of the root." "Oh, but doctor, you see I can take it off and put it on just as easy!"

was her reply, and she illustrated her remark by promptly removing the crown. Instead of a root, I saw the crown of the tooth, and said, "All that tooth needs is a filling; come back to the operating room and I will examine it." Upon examination I found that only one side of the tooth had been decayed, and that it contained only a very small cavity, but the carborundum wheel had done its work so thoroughly that a filling was out of the question, and the result was the placing of a white crown upon the root.

Upon seeing the young lady a few days after, she said, "I am so thankful to you, Doctor, for taking that ugly gold crown off. Why, papa put on his glasses and then had to ask me which tooth it was."

The third and last case, was where one of my non-resident patients informed me that the dentist in the town in which she resides, insisted that the cutting off of the four front teeth, of her fourteen year old son, and the substituting of crowns was the only remedy. The crowns had been ordered from the dental depot, when, thinking that perhaps it was in the nature of unnecessary and heroic treatment, she brought the boy to me, asking my advice. Upon examination it was very plain to be seen that all the teeth needed, was a filling or two and an inlay.

And so I might enumerate innumerable instances where a good filling would not only have been more satisfactory to the patient, but decidedly more creditable to the operator. It is the contemplation of this reprehensible practice on the part of some dentists, with a higher regard for the "almighty dollar" than professional pride, in the placing of crowns upon what are, in one sense of the word, healthy teeth, which calls forth the subject of this paper; and looking at it from this point of view, I say most decidedly—"Less crown work and more good fillings."

Pharmacognosis.

BY J. W. LOPPENTHEIN, D.D.S., PH.G., L.P., M.O., LUDINGTON, MICH.

If there is one study that has been neglected more than another it is the study of pharmacognosy, or the science of drugs and preparations. Our medical and dental colleges have been

adding one study after another, but the study of pharmacognosy has not ventured beyond the threshold of the leading schools in pharmacy. It is surprising to one if he will stop to consider what may be gained by a comprehensive knowledge of pharmacognosy, and still more surprising to think that even up to this late day no steps have been taken to introduce this much needed study in our medical and dental schools. The students of to-day are no better equipped in pharmacognosy than they were a half century ago, while in other branches they have opportunities and advantages that are as far superior to those of fifty years ago, as our American soldiers compared with the Spanish.

We have men that graduated years ago in the medical and dental profession, and since then the great wheel of time has been rolling continually onward, counting off hours, days, weeks, months and years, and still the graduates of to-day are not farther advanced in the science of drugs and preparations than their forefathers, and stand on equal bases.

Does it not seem strange indeed to think that we are so far behind the times? Nevertheless such is the case. Go where you may, ask your family druggist what experiences he has met with in dealing with medical men, and you will find it the same as I did while acting as master of the mortar and pestle, that physicians and dentists may possess a fair knowledge of *materia medica*, therapeutics, toxicology and posology, and still not be able to distinguish tr. iron from tr. iodin, or borax from alum, and why is this? Simply because they have not had a chance to study pharmacognosy; they have not had an opportunity to acquaint themselves with the drugs they prescribe day after day. According to my notes, Prof. William E. Quinn's definition for *materia medica* means all that is known about a drug, and he most certainly covers all the ground in those few words. It is not because we do not know what is included in the term *materia medica*, that our medical and dental graduates know no more about the subject, but simply because it has not been taught. A thorough knowledge of the drugs in common use would widen the channel in this particular line; it would teach us to recognize drugs, to determine their quality, to detect their adulteration, and to distinguish the characteristic elements of those which are closely allied. Organic drugs, which resemble each other in physical and structural properties, should be brought together

and the special properties of each made the more prominent by comparison. By having the course in materia medica and pharmacognosy linked together, as they should be, it could be made a very interesting study. As it is, the student listens to lectures and knows no more about drugs and preparations when he graduates than should be expected from a freshman.

It is not a difficult thing nor a very expensive luxury to have a laboratory fitted out for this kind of work, and how much more interest students would take in materia medica if the fundamental principles and all its details had been presented to them as they should be. During my college life I found that students were more alarmed when it came to the final clash in materia medica, than in any other subject, and why should this be the case when it is not at all a difficult study? The only reason that students know no more about the subject is, as has been stated above, it has not been taught in all its details as it should be.

I trust that the day is not far distant when the subject of pharmacognosy will receive all the attention it justly deserves, and that we may walk into the 19th century with this study added to our college course.

Proceedings of the Cincinnati Academy of Dentistry.

An Interesting Case.

BY G. S. JUNKERMANN, M.D., D.D.S., CINCINNATI.

I HAVE a case to report which is one of more than usual interest. I have up to the present time never seen a case of the kind nor heard of one. The case I would like to have discussed, if the members choose, both from an anasthetical point of view and from that of dental jurisprudence, because its use comes under both of these heads.

A servant girl about twenty-three years of age, employed by our family for about two years, had a severe case of odontalgia or toothache one Sunday. The majority of the dental offices in town were closed, so she went to one of those "*dental parlors*" to have the tooth extracted. The operator put her under the influence of gas and removed the tooth. The patient regained

consciousness; did not feel comfortable and came home, where she had a severe coughing spell. From that day this individual began to run down in health, and in about three weeks became very much emaciated. After inquiry I found that there was tuberculosis in the family. I finally had to inform the servant that she was too sick to work and that she must go home. She immediately consulted a physician, and she stated to this physician that her trouble had dated from the time she had taken nitrous oxide gas in that dental office. The doctor after examination informed her that in all probability the gas she had taken was very bad and had affected her lungs, and she was now in a state of tuberculosis. She doctored with this physician, each day growing more emaciated and sicker, until finally she gave him up for another. This one also examined her lungs and informed her that the right lung seemed to be very much affected, but that he did not think she had any consumption. The girl still continued to be ill, and we were expecting at any time to hear of her death. While she was so ill she lost a sister with tuberculosis. About ten days or two weeks ago she was sitting in her home with a lady friend of the family, when the patient was suddenly taken with a very severe fit of coughing; but nothing unusual was thought of it, as she was subject to such terrible spells, but finally after coughing very hard, she coughed up the root of a large molar. She immediately picked it up from the floor where it had fallen and showed to her lady friend. I have in my possession to-night the molar root she coughed up from her lungs. Since that time,—it has probably been ten days or two weeks,—the patient has taken on flesh, is of a good color, has stopped coughing and has become comparatively well.

To me this is highly interesting, and I decided to report it to the Academy. I will show you this root if you will promise not to lose it, as something may yet come of the case.

The question arises in speaking of it as a case of dental jurisprudence as to whether the one who performed the operation would be held liable financially for a matter of this kind, or whether it would be considered under the heading of usual accidents. This operator, it seems to me, must have extracted this tooth, but in breathing, the epiglottis being raised, this root, having escaped the operator, slipped down into the lungs, lodged in the apex and produced a perpetual irritation, and this is what

the physician discovered as being sore in the apex of the right lung.

If any of these gentlemen have heard of cases of this kind I would like to have them tell us of them, and I leave it to you as to whether this is not an interesting case.

DR. LEAHY: Years ago I was employed by an old dentist of this city and one of his objections to giving nitrous oxide gas was he claimed to have known several parties to have taken the gas and shortly afterwards they began to go into a decline as it were; he said they became emaciated. I personally have never seen a case myself where the patient made such a complaint, but I have talked with several old dentists and I have heard before that there were cases where people had taken nitrous oxide and never were well a day afterward.

Now it might be possible too, that one would become contaminated and get tuberculosis from the inhaler. It can be readily seen how one could inhale the germs, but we see from this case of course, that it was not tuberculosis. Tubercule baccilli may have been present, but as a rule operators do not examine the sputum.

As to the jurisprudence. Of course it would remain with the testimony in evidence as to whether the operator was liable or criminally careless or not. It was an accident, and yet it was one that he should have avoided, and it is a wonder to me that more people are not injured from just such things as these dropping down the larynx.

To-day I had a case brought to me by a dentist, and I extracted thirteen teeth under gas and one of them fell back and got part way down the throat; I stopped work at once and got the patient to throw it out. One advantage we have with gas we do not have with any other anesthetic, and that is the reflexes have not all left the parts, especially in the throat, and as a rule the operator will readily know when something has dropped down, because the patient will cough; this is not true of chloroform or ether. In that way we can hold the operator as being criminally careless, because it is his duty to see that no parts go down the throat, and if so it is his duty to stop work and go after them. It is a wonder to me we don't have more of these accidents because the gas is given in such a careless manner. With the old inhaling tube, which is dirty and filthy, there is no doubt in my mind but what people may become contaminated

with various diseases. With the old fashioned inhaler which is placed in the mouth, the patient is very apt to become contaminated.

In the case under discussion, if there were tuberculosis present, it would be the acute miliary tuberculosis as she had trouble before. No doubt she has tubercle bacilli present, because you will notice that tuberculosis is handed down more readily through women than through men. I believe Osler claims it is handed down through the maternity side of the house more readily.

DR. JUNKERMANN: I advised the girl to go down and inform the dentists who extracted the teeth, if they would pay her wages for the time she had been out of work (five months) and pay her doctor's bills, she would be perfectly willing to let them off. I see the importance a case of this kind will have before the eyes of the law, because I have made a little study of this matter of dental jurisprudence.

I feel the girl would have a very strong case, but had the trouble occurred in a reputable office I would have argued for the operator, as I do in all cases under such circumstances. I do not intend to protect them in this case. This girl ought to have recompense for her trouble and had the accident happened to me I would have been willing to have paid just as much as I expect them to pay now. I believe that any one who extracts a tooth ought to see that tooth after it is extracted.

Every operator should be especially particular in using nitrous oxide gas.

Amalgams and Alloys.

BY DR. SIDNEY J. RAUH, CINCINNATI.

I INTEND, this evening, to talk about the alloys and amalgams, which are used in my office, how they are manufactured, where indicated, their composition, etc. No claim of originality is made, as almost all my material is taken from Dr. J. Foster Flagg, than whom no greater plastic worker ever practiced in our profession.

The principal metals used in the making of alloys are silver, tin, copper, gold and zinc, also platinum, bismuth and cadmium. The latter three are infrequently employed, and never in the

formulae presented in this paper. Platinum has some good qualities, but as they are also properties of either gold or tin, it is not considered. Bismuth and cadmium should never be used, the former because it works excessively dirty, and the latter forms a yellow oxide, which discolours and is deadly injurious to the pulp. *Silver* is the most important. It is preëminently the tooth conserving metal. In the mouth it forms the sulphide of silver, which is conducive to permanent saving of the teeth. Next in importance is tin, it being used in all alloys, for its power to overcome the expansion of the silver and as a flux, *i. e.*, it lowers the melting point of the other metals.

Copper is compatible with tooth structure, and is also tolerated by the pulp, when in close proximity to it. It is the only metal used alone to form an amalgam with mercury. When required for this purpose, it is precipitated by either zinc or iron from a solution of copper sulphate (CuSO_4). Copper overcomes the expansion of silver.

Gold is a metal which seems to increase the rapidity of setting, gives increased edge-strength, diminishes shrinkage, helps keep color and imparts a "buttery plasticity" to the working of an amalgam.

Zinc preserves and controls color, gives whiteness and prevents shrinkage. It has poor edge strength and for this reason little is used.

Four kinds of alloys are employed, viz.: contour, submarine, facing and coin. The two former frequently and the latter two only on rare occasions.

Contour is composed of silver 70 parts, tin 26 parts, gold 3 parts, zinc 1 part. It is the alloy which is used in almost all cases where an amalgam is indicated for whatever cause. This being a high grade alloy, an excess of mercury must be employed, and it will be found almost impossible to make a good "mix" without the use of mortar and pestle. This alloy retains its color.

Sub-marine is composed of silver 60 parts, tin 35 parts, copper 5 parts. It is employed in teeth of low grade, as a tooth conserving, with the expectation of discoloration in the course of time.

Coin alloy is composed of silver 80 parts, tin 10 parts, copper 10 parts. It is used very much under the same conditions as submarine, but as it contains five per cent. more of copper, would be indicated in the lowest and poorest grades of teeth.

Facing consists of silver 40 parts, tin 55 parts, zinc 5 parts. It will be readily seen that it would have scarcely any edge-strength, its main feature being that it retains its color and is very white. It is used where an amalgam filling is in such a position as to be seen when the mouth is opened, and should always be preceded by a filling of higher grade alloy, the facing being merely used for appearance on the surface which can be seen.

Mortar and pestle should always be used instead of mixing in the hand, as they will be found to be time savers and better results will be obtained. After their use the amalgam is worked in the hand for a moment to make it perfectly smooth. A pair of small scales to weigh the alloy and mercury when employed will be found to be economizers of material and time, besides giving more accurate results. Different alloys require various amounts of mercury, the more silver and gold the more mercury being necessary for a good mix.

In inserting the filling the amalgam is first used with quite a quantity of mercury and gradually, as the filling proceeds it is wafered, *i. e.*, squeezed through chamois by means of the wafering pliers, the dry amalgam taking up the excess of mercury, so when the filling is completed it will be found quite hard and only take a short time to set.

Fillings should always be polished, the same as gold, at a subsequent visit, and if the same care in the preparation of cavities be used as for gold, better results will be obtained from the much abused and frequently used amalgam.

DISCUSSION.

DR. LEAHY: I agree with Dr. Rauh that we should use the scales. In manipulating any alloy we should begin with a wafer that has an excess of mercury and gradually use a drier amalgam, so that when we come to finish it it is quite hard. I think the trouble with most amalgams is that they are worked too soft. I do not know that it is policy for a man to make his own alloys; this has not been a success with me, and I have made a good many batches. Different results are obtained from the same formulas. I think the great secret is in preparing the cavity and in manipulating the alloy. There are many cases where we can put in a good amalgam filling and preserve a tooth, where we

could not use gold to advantage. Next to gold I consider amalgam the best permanent filling material we have. Instead of using the pliers I use the chamois and my fingers, and I can get the amalgam so dry that it is almost impossible at times to work it.

DR. SCHRAMM: Instead of making the alloy very moist in the first place, I simply pack the entire filling quite moist. Writers of text-books say, "You can absorb mercury with tin-foil!" You cannot do it. I have tried it for fifteen or twenty years and have failed. The only way I can do it is with gold. I can make a filling in three minutes as hard on the surface as you can by the gradual packing of different degrees of amalgams. Your gold is not wasted; you save it and you can melt it up again. The mercury evaporates under the blowpipe flame and the pure gold is left.

I use not only the mortar and pestle, but the hand as well. I first thoroughly amalgamate as much as possible in the hand and then put in the mortar. If I have any suspicion as to the alloy, I even wash it in alcohol. So many dentists polish their fillings in theory and in dental societies, but in actual practice you cannot see the results of their work. Now let us go to work and polish them.

DR. GROVE: When you burnish the tinfoil on the amalgam filling, is the tinfoil absorbed in the filling or the mercury in the tinfoil?

DR. SCHRAMM: Both; the tinfoil seems to melt under the influence of the mercury on the surface of the filling, and appears to be so incorporated as to make more of a tin filling than an alloy filling after you are through. That is not so with gold. It is not expensive at all to use gold, and it will do the work every time, and if any of the gold remains on the surface of the filling it is no detriment, but it is a detriment if any tin stays there. Now you can figure this out as you think the matter over, and see whether I am correct.

DA. RAUH: Yes, I do polish my amalgam fillings; every amalgam filling that goes out of my office I polish if the patient returns. If the patient does not return, of course that is no fault of mine.

Another point about amalgam fillings: you will find if you take an amalgam filling which is bulged, and where there is a

slight decay around the edge, you can cut that out and patch it and you will have a filling as good as it was the day it was inserted. It cannot bulge only in one direction; it has to bulge inside as well as out. We have no right to continually take out these fillings because they may look a trifle badly; we can do better work by making use of the same filling in the tooth.

DR. McLEAN: The assumption of the spheroidal form of all alloys placed in the teeth is found with the best we have in the market. Although our essayist has cited Dr. Flagg as being the most illustrious plastic worker in the world, I will state that Dr. Black is his equal. He claims that expressing from the mass all the mercury that is possible prior to its insertion in the cavity, is absolutely necessary to assure the longevity of the amalgam filling. I agree that the mercury should be expressed from the mass as much as possible, and whether you do it by use of the pliers or otherwise I think the result is the same. The effect of finishing a filling with drier amalgam than you have in the mass itself, is a detriment to the longevity of the filling. I think mercury is an irritant to pulps; deep cavities, where amalgam is to be inserted, should be lined.

The utility of these amalgam fillings is dependent upon the method in which they are inserted as much so as the means of preparation of the various metals used in the alloy.

Every dentist should finish these fillings after they are hardened.

The V. H. Jackson Compensating Bridge.

DIGEST OF PAPER READ BY V. H. JACKSON, NEW YORK, AT NATIONAL DENTAL ASSOCIATION.

THE bridge thus designated is designed to fill the space between teeth having vital pulps and unbroken crowns, but of such shape, or inclination, that the space between the tops of the crowns is less than at the necks, and where it is desirable, not to cut away the enamel to get parallel piers. Dr. Jackson considers it "inexcusably bad practice" to cut away the enamel from teeth that have vitality, in cases where the desired result can be obtained by methods less destructive. In the present method the bridge is made either with a saddle resting upon the gum, or is suspended

from the abutment teeth by its attachments. The bridge is introduced from either the lingual or the buccal side of the arch, as determined by the angle of the teeth and the contour of the gum. An accurate impression, and a very accurate plaster model of the teeth that are to serve as abutments, and of the contour of the gum between them, are essential. A collar is adjusted to each of the anchorage teeth of the model, broad enough generally to reach from the gum to the grinding surface, leaving one end of the collar about one-eighth of an inch longer than the circumference of the tooth; the end to be bent outward, at a right angle, and strengthened with an additional layer of gold, and have a hole passing through it for the reception of a bolt. The collar must be well contoured to fit the surface of the tooth. The abutment tooth must, if necessary, be wedged away sufficiently to allow the collar to pass freely before the impression is taken. Several methods of making the collar tight around the tooth have been utilized; for most cases, the tap bolt and nut gives the best satisfaction, made of hard, non corrosive metal and provided with a deep, strong thread, having the thickness of the nut about one-half the labial diameter of the tooth. In some cases funnel-shaped tubes are used to receive conical nuts. The bolt may enter from either the buccal or the lingual side. A strong clip of plate metal is extended from the collar onto the grinding surface of the tooth to prevent the collar from slipping toward the gum. The clip should be strong enough to withstand any pressure on the bridge that may be made in mastication. If the bridge is to rest in contact with the gum, a saddle of thin platinum, or gold, is swaged to fit the portion of the gum that is to be covered. When the collars and saddle have been accurately fitted to the model, porcelain teeth are backed, articulated, and waxed into place, and the parts united as in ordinary bridge-work; or the collars and saddle having been adjusted, plain rubber teeth may be used and the case packed with rubber and vulcanized, as in making a partial rubber plate. In suitable cases the Mason detachable porcelains may be used. For crossing the labial side of a cuspid a loop of gold wire mars appearance less than a collar. This should have the inner side flattened; one end of the wire may be threaded and made to project through the tube a little and engage with the nut; the other end bent at a right angle, to form a hook to catch in a hole in the distal side of the cap, which

should cover the mesial, distal, and lingual sides of the cuspid. Before setting the bridge, the teeth for anchorage are polished and made dry; the inner sides of the collars covered with a thick solution of chloro percha; the collar bands are sprung backward to pass over the teeth as the bridge is adjusted. The collars are then drawn around the teeth and the tap-bolts screwed quickly to place. After the bridge has been made firm, the small openings around the heads of the screws may be filled with gutta-percha; in some cases a bolt with roughened surface can be retained with oxyphosphate cement, and not depend alone upon the screw thread.

A large number of cases illustrating the various applications of this method were described in detail, and models of cases, with bridges in position, were passed around for examination.

The paper was passed without discussion, the hour for final adjournment having arrived.

The Comparative Method of Teaching Dental Anatomy.

ABSTRACT OF PAPER BY A. H. THOMPSON, TOPEKA, KANSAS; OFFERED
BY SECTION VII., NATIONAL DENTAL ASSOCIATION.

DR. THOMPSON spoke of the wonderful collection of skulls and teeth exhibited at Old Point Comfort, and the papers read, proof of the growing interest in the subject of comparative Odontography, and a matter of congratulation to those who have labored for years to impress upon the faculties of our colleges its value as a contributory science; and the desirability of its recognition in our curriculum as throwing light upon human odontology.

Dental anatomy was long taught by study of the human teeth alone. The limited human denture comprised the whole range of the subject of odontography as taught in our books and in our schools. The teeth of the lower animals were regarded as mere curiosities. The teeth, and in fact all the organs of the human body, were studied as if man were a special creation— independent of all other forms of life. But all this has been changed, and methods of study have been revolutionized.

All life is now regarded as a unit—man is but a part, a very

insignificant part, of the realm of nature. He was not a special creation; he has no kingdom of his own; he is a vertebrate like other vertebrates; no class of his own, he is a mammal like other mammals; no order of his own, he is a primate sharing this distinction with apes and monkeys. The skeleton of the higher apes resembles that of man more than it does that of the monkey below them. This is also true of the molar teeth, and it is proper and rational that the organizations of the lower animals should be studied in connection with that of man, for the knowledge to be gained by comparison of related types of structure. This is the only truly scientific method. The paths of evolution have been marked out and the life-history of the lower animals is now well understood.

The phylogeny, or history of the evolution of the type of man from the lowest forms, has been made possible only by the comparative method. Of his ontogeny—the development of the individual in the embryo—we have learned much by comparing the various stages of growth with similar stages of the development of lower animals. The human embryo recalls types of lower forms, at various stages of its development. This is also true of the various organs, of which much is learned through the study of their evolution in the lower animals, from the lowest organisms in which a suggestion of these organs may be found, to the highest types.

The comparative method having been thus applied to the study of other organs, it is but rational that it should be similarly employed in the study of the teeth of man.

The life-history of the teeth is of special interest to us as dentists, and we must consider it from the scientific standpoint.

The teeth were developed for a functional purpose—that is, the reduction of food preparatory to digestion. By the investigation of the teeth of the lower animals, we learn much concerning the origin and development of these organs. We learn that, morphologically, they are mere dermal structures and appendages, modified and elaborated for food reducing purposes. The variety of jaw movements is important in the influences that this force has upon the form and size of the jaws and the masticating apparatus, and the tremendous effect it has upon the forms and positions of the teeth.

The adaptation of tooth forms to the various kinds of food

is most wonderful and beautiful, and the various types illustrate the variations in the forms of the teeth, as adapted to their varied functions; the incisors for cutting purposes; the canines as prehensile organs, of extraordinary development and form in some of the lower animals, but greatly reduced in man; the molars as crushing and masticating organs of greatly varying forms, from simple to complex, adapted to various forms of food. All this offers a most fascinating study taking us into fields where the highest genius of our race has exercised its powers, and where great biological problems bearing upon the origin of man have received illumination. The evolution of the jaws and of jaw-movements, and the principles of occlusion, a thorough knowledge of which is of such vital importance to us, in our every-day operations, is greatly in need of illumination. We have studied only the jaws of man, which are but rudimentary, as compared with the jaws of many other animals. We need to go far afield, to learn more of the mechanism of the jaws from animals in whom it is more highly specialized. The relation of tooth-forms to jaw-movement is a most interesting branch of the subject, there being an exact relationship between tooth-forms and their functions and jaw-movements. It is a field that offers great possibilities of discovery for the student.

In the discussion of this paper, DR. BARRETT said he did not agree with the essayist that the mastication of food was the primary function of the teeth. Man, in his *species* is the primal object; in his *class*, mammalia, he sinks into insignificance. The teeth are primarily weapons of offence and defense; secondarily, they are organs of prehension; *perhaps*, thirdly, they are organs of mastication. In the study of comparative anatomy, we must rise to a higher plane than that of our daily labor; we must study from the scientific, not from the standpoint of the bread-and-butter question. It is not true science when we talk of dentistry; it is applied science, but it is not pure science. The teeth are not, first of all, organs of mastication.

DR. CRAWFORD said that he was greatly interested in the development of this question. With all due deference for Dr. Barrett, he did not believe that the human teeth were primarily organs of offence and defense. He thought these questions should be studied from the standpoint of nature, and further than that, in their bearing upon life, character and civilization.

DR. THOMPSON, in closing the discussion, said that he had not felt under obligation to consider the primary functions of teeth, but he does believe that their primary function is food-reduction, for the nutrition of the system. Their function as weapons or tools is secondary, not primary. He referred to Dr. Walker's studies of the teeth and jaw-movements, upon which, he said, Dr. Walker had thrown a great deal of light, and he hoped he would do more work in this direction. We can learn much by the study of the lower animals.

Report of the Committee on Foreign Relation of the National Association of Dental Faculties.

PRESENTED BY W. C. BARRETT, M.D., D.D.S., CHAIRMAN.

(Concluded from page 533.)

THE second cause of complaint that has been urged before your committee is that degrees from institutions with high-sounding titles and names, and which are perhaps endorsed by state officers as having legal status, practically sell their diplomas abroad. This complaint is also one of long standing, and your committee believes that it is well founded. The condition is one for which, however, this association is not responsible; yet it seriously reflects upon American educational institutions, and is a source of scandal and opprobrium which cannot be ignored by it. In foreign countries the embarrassments of the situation are not comprehended. Under all the European governments it is possible to enact a general law that shall be effectual. We have nearly fifty separate states each autonomous so far as domestic affairs are concerned, and all educational matters belong to that category. Hence one state may enact a law under which it is possible to incorporate an institution essentially fraudulent in character, and the other states are powerless to prevent or correct the evil.

The state of Illinois is a glaring example of this kind of vicious legislation, and nearly or quite all of the fraudulent colleges are now located in the city of Chicago, to the great reproach of the state and the profession of dentistry within its borders. That city contains some of the very best of our profes-

sional educational institutions, and at the same time the most villainous impostures conceivable. Dentistry in Chicago can boast of as high-toned and eminent practitioners as are found anywhere in the world, and it is disgraced by some who appear to acknowledge none of the usually accepted professional obligations, while using the professional name to further their own illegitimate ends. Unfortunately it is sometimes hard for the uninitiated to tell them apart, for some of the latter have held responsible professional positions, and use that seeming indorsement in the pursuit of their illegitimate business.

Men unacquainted with professional educational affairs, who know not the wiles of designing tricksters who would take advantage of an innocent law to further their own selfish purposes, are not the best judges of what is proper legislation for the professions. In an unsuspecting moment, and without sufficient consideration, there was placed upon the Illinois statute-books an enactment which, while assuming to further business interests and honestly intended for their benefit, allows the incorporation under the law of associations that are carrying on a fraudulent diploma business. So loosely or nefariously drawn was this bill that for the merely nominal fee of registration, amounting to less than five dollars, totally unqualified men are permitted to issue diplomas of qualification in the different professions. This seems a monstrous state of affairs, but it has been suffered to exist for years. The citizens of other states are powerless, for Illinois remains an outlaw in this respect, and continues to protect her criminals in their villainy. The task of securing the repeal of this vicious law is too great for the courage of its reputable men, for ignorance and vice have struck hands in its maintenance. Even the excellent and influential Illinois State Dental Society has looked upon this condition with seeming indifference. As a consequence of the continuance of this demoralizing law a considerable number of the practitioners of Chicago carry in their pockets or exhibit on their walls, college charters conferring upon them the power to issue diplomas in dentistry. It seems to your committee that the decent part of the profession of this grand state should begin an agitation for its repeal. It is earnestly to be hoped that as soon as the professional men of the state are aroused from their lethargy and made to comprehend the enormity of the condition, they will present the matter before the

Legislature in its proper light, and the disgraceful law will be so amended that it will not apply to educational institutions, and the charters already issued under it will be very promptly canceled.

Some of these so-called dental colleges have no other existence than this state incorporation. They are owned and run by one man, and he perhaps sails under a false name. Of course, if they give no instruction whatever, and yet confer degrees, they are amenable to the general law against fraud. But their diplomas are not offered at all in this country, being only advertised abroad. They know very well that if they attempt to ply their their infamous trade at home they will speedily be brought to grief, and so they permit no proofs of their nefarious work to come to light in America. There is no indication of their business at their published address, and any letters sent to them from this country are carefully left unanswered. Their work is done through European agents. We cannot locate them, and there are no proofs to be obtained in this country. Our *confreres* abroad complain bitterly of these swindlers, but they do not comprehend the situation; and when we ask them to obtain the proofs of their villainy they reply that the miserable affairs are under our immediate noses, and we should get the testimony here.

Sometimes our professional journals, and some of our prominent men, and even professional organizations instituted for the purpose of regulating dental practice here, unwittingly further the objects of these men by falsely charging that respectable schools are practically engaged in the same business of granting irregular degrees, and thus they efface the line of distinction that the reputable colleges have been striving to set up. It is a singular fact that nearly or quite every application which approved colleges received for irregular degrees comes from Europe, and because of these miserable villifications of respectable schools by American dentists acting with more zeal than discretion and more fervor than knowledge, there is not an American college that is free from these insulting applications.

This is the condition that confronts us in America. This association has done what it could, and advanced as fast as it could. It has been embarrassed by the lack of co-operation, and even by the active opposition of those to whom it had a right to look for help. It has been denounced because it has not taken

the radical steps demanded by men who have little comprehension of the difficulties to be met, and who do not comprehend that the tone of the colleges and the profession as a whole, can only be advanced by a movement that is only made as a whole. At the most critical moment, the ground that had been gained has been lost through the absolute refusal of some of the colleges to vote to sustain the most moderate requirements, and it may almost be a matter for astonishment that so much has been accomplished. This association has so sharply drawn the line between the reputable and the disreputable schools, and despite the fact that overzealous and unwise men have been industriously engaged in effacing it, and confusing the good with the bad by claiming that all have the same character, in this country the distinction is well known. It should be, and if these ill-advised strictures are abandoned it will soon be, as well comprehended abroad. All that is necessary is to scan the list of the members of the National Association of Dental Faculties, and if the name of an institution granting a diploma is not found in it that document is worthless and unacknowledged here. If any college that has a membership in this association grants a degree or accepts a student irregularly, the faith and honor of every other member is pledged to inflict the most condign punishment upon presentation of the proofs.

But it has been charged that violations of the rules have been committed by members without subsequent punishment. There appears to be an impression that it is the duty of the association to discipline a college upon mere rumors, and to inflict punishment without proofs. This would be the rankest injustice. There have never yet been definite charges made against a college by any responsible party, with accompanying proofs or positive information where evidence could be found, without the most thorough investigation. It has been charged before your committee that the Stauber case was such an one. But in that case the implicated college corrected the error of its own volition. The remedy for infraction of our regulations thus rests in the hands of every respectable member of the profession, for so carefully has this association guarded this point that it has appointed a committee with plenary powers for the express purpose of investigating charges of irregularity brought between the sessions, thus offering swift and exact justice.

As to the fraudulent colleges, your committee considers it the imperative duty of this body to employ every possible means for their exposure and suppression. We believe that it should protect the good name of American dentistry, and American educational institutions. In this faith your committee, through its chairman, authorized the expenditure of a reasonable amount of money in the prosecution of investigations of unrecognized and fraudulent schools, and secured the co-operation of a thoroughly competent man for this work. As a consequence, considerable progress has been made in the unearthing of some of them. But it will probably take years of persistent effort to accomplish all that is desirable. We have received the most encouraging letters from our *confreeres* in Europe, and have been materially aided by some of them. We have been assured that if such work is continued it must result in the higher appreciation of this association in Europe, and in the perceptible raising of the estimation in which our degree is there held. Hence we feel warranted in urging upon you increased zeal in the prosecution of the work already commenced.

In view of all the considerations that have been presented in this report, your committee recommends the adoption of the following resolutions:

1. *Resolved*, That a standing committee of five be appointed each year by the president of this association, to be called the Committee on Foreign Relations, whose duty it shall be to report each year upon the relative status of dentistry in America and Europe, and to suggest any measures that in the opinion of its members will promote the welfare of our common profession, and the usefulness of the distinctive American dental degree.

2. *Resolved*, That the Committee on Foreign Relations be instructed to use its utmost diligence in ferreting out fraudulent or irregular colleges, and the granting of degrees irregularly by recognized colleges, should this be done, and to leave undone nothing within their power to bring to justice institutions granting irregular degrees or degrees irregularly. To this end this association authorizes the committee to expend any reasonable sum of money, which, if necessary, shall be raised by some fair assessment of the colleges of this association.

3. *Resolved*, That an advisory board, to consist of not more than three qualified persons from each of the following named countries of Europe, be appointed by this association, to the member or members of which the papers of any foreign applicant for matriculation in any

American dental college shall be referred for verification or indorsement, it being understood that such papers shall be referred to the member or members of the board appointed for the country in which the applicant is or has last been a resident. The countries to be represented shall be : 1, Great Britain ; 2, Holland and Belgium ; 3, Denmark, Norway and Sweden ; 4, Russia ; 5, Germany . 6, Austria and Hungary ; 7, Italy and Greece ; 8, France ; 9, Spain and Portugal ; 10, Switzerland and Turkey.

W. C. BARRETT,
S. H. GUILFORD,
D. J. McMILLEN,
F. D. WEISSE,
A. H. FULLER,
Committee.

Answer to the Criticisms of my Paper, entitled "Principles of Force and Anchorage in the Movement of Teeth."

OUTLINE OF PAPER READ BY C. S. CASE, CHICAGO, AT NATIONAL DENTAL ASSOCIATION.

HE said that had he anticipated at the last meeting of the American Dental Association—a meeting of representative American dentists—that a principle, founded upon the most simple and well-established laws of physics, would be criticised as of no practical or scientific value whatever, he would have been prepared, as on the present occasion, with apparatus to practically demonstrate its truth, and also with models, which speak for themselves of its value, and which fairly represent hundreds of similar cases in his practice.

As it was, with nothing to demonstrate the practicability of his claim, the discussion had resulted in a controversy of opinion alone, which left the profession at large divided in opinion as to the practical value of his methods in general.

The question which occasioned the principal contention was in regard to the action of force, when applied to a rigid bar or extension above the gingival margin of the crown. Dr. Case's methods are based upon the principle that when force is applied anywhere upon a bar or extension above and on the outside of the gum, made rigid with the crown, it will have exactly the same effect as if applied to the root itself, at a point on a line with the direction of said force.

To place this claim beyond controversy, Dr. Case had on exhibition an apparatus consisting of a large wooden tooth suspended in an upright position by being attached along the posterior surface of its root to five steel spiral springs, which in turn were fastened to and supported by a frame. These springs were so adjusted that a given force applied to each, separately, would produce the same amount of motion in compression or extension.

Force applied to this tooth, in a manner similar to that which is possible with a dental regulating apparatus, represents the direction, and approximately the energy, expended at different locations upon the root, the movement being registered by hands moving on dials in the same direction that the portion of the root moves. To the front of the tooth was attached an upright extension, similar to that extending above the gum margin; in Dr. Case's regulating apparatus the extension having notches at different points for the attachment of power bars.

Power applied at the highest point upon the crown, possible with an ordinary appliance, showed the tooth tipped from an upright position, the cervical portion moving in the direction of the applied power, the apical portion moving about one-fifth as far in the opposite direction. Power applied above this point soon found a place where the end of the root ceased to move in the opposite direction, but remained stationary, as a pivotal point to the movement in other parts. Power applied upon the upright bar, at a point whose line of force intersects the root in the center of its area of resistance, moved the whole tooth equally, in an upright position, in the direction of the force.

The apparatus thus shows that force acting upon a bar made rigid with the crown, and extending in front of the gum, would produce the same effect as if applied to the root itself, and the same as if the space between the bar and root were one solid piece—as shown in the apparatus by filling the space with a piece of wood cut to exactly fill the space—the result being the same, whether the space was filled in with the block, or left vacant.

In a regulating apparatus constructed upon this principle allowance must, of course, be made for the varying stability of the surroundings of the natural tooth, and the influence of the variable size, shape and number of the roots; but the principle was demonstrated, showing the direction and amount of force that the root can be made to exert upon its surroundings.

The practical application of the principles of dynamics, so far as we can utilize them, is the only scientific course to be pursued in the practice and teaching of orthodontia.

Dr. Case next demonstrated, by means of a box of modeling clay and a rod, the direction of the force exerted by different portions of the root of a tooth, as illustrated by a post driven one half its length into clayey soil. This was described and illustrated, but not demonstrated at the preceding meeting. A mathematically correct demonstration would demand a medium absolutely and unchangeably uniform throughout in elasticity and resistance, a medium purely hypothetical and especially dissimilar to a tooth situated in the alveolar process; but the principle is important and valuable, viz.: that when power is applied at different localities upon the exposed portion of an incisor tooth, the relation of force exerted at different portions of the imbedded end is practically maintained. If it is desired to protrude the end of the root of an anterior tooth to give a fuller contour to the lip, power should be applied at the extreme incisal end of the crown. If, on the other hand, it is desired to retrude the tooth, with no forward tipping of the root, force should be applied at the gingival border. An upright bar made rigid with the crown and extending above the gingival border affords opportunity for still other directions of force.

To the objection raised to the employment of bands encircling the teeth, necessitating separations for their adjustment, Dr. Case said that it was rarely necessary to separate more than could be accomplished by leaving a piece of waxed tape between the teeth over night. His bands are prepared with the greatest care and accuracy, rolled to exact sizes, ranging from three to ten thousandths of an inch in thickness, and of different widths. As five thousandths of an inch, or No. 36 B. & S. gauge, is the thickness of ordinary ledger paper, while the bands principally used are three and three and one-half thousandths of an inch thick, the separations necessary are a matter of very little moment, as they soon close after the apparatus, or retainer, is removed.

In the discussion of this paper, Dr. H. A. SMITH spoke of a case recently treated by Dr. Case, which had been referred to Dr. Smith, after treatment by three other dentists. The trouble was really with the inferior maxillary, while all the work attempted had been put upon the superior. When Dr. Smith saw the case

he said, "There is but one man who can manage this case, and that is Dr. Case." Months had been wasted in labor that was utterly objectionable. There had been no study of contour. Such cases should be referred to a specialist, a master in the art and science of orthodontia.

DR. JOHN S. MARSHALL said that when Dr. Case had presented the subject to him he had thought he was wrong on the question of leverage, but his exposition of the subject to day had made a convert of him, and he desired to give his testimony to that effect.

A Monthly Summary from Our Foreign Exchanges.

Translated expressly for the OHIO DENTAL JOURNAL.

By H. PRINZ, D.D.S.

A Case of Alveolar Hemorrhage in a Hemophite.—A young man of about sixteen was brought to my office by his family physician. About six days previously he had a molar removed and he was still suffering from hemorrhage. There was great danger of collapse. Almost everything had been tried; plugging, actual cautery, a vulcanite splint, etc., but without success. After thoroughly cleansing the wound I found the blood oozing from between the cone septi of the first and second molars. Having a new hemostatic ferrostypine, at hand, I was eager to give it a trial. A quantity of the powder was mixed with plaster of Paris and water and a tight rolled cotton plug saturated with this mixture and forced in each single alveolus and the whole was further covered with a thick layer of the same material. Very soon the bleeding stopped. Now I prepared a shellac gutta-percha splint, brought it in place and adjusted a bandage about the head. In about an hour I allowed the patient to leave the office. About two weeks afterwards the patient returned, the plugs were removed but the bleeding started at once again. Now a partial rubber plate with two springs was constructed, the alveoli again plugged as before and the splint inverted. In about a week new granulation took place. Later on the plug was removed spontaneously. I am convinced that the patient's life had been saved by the use of ferrostypine.—*Dr. Kuehns, Dent. Monatsschrift für Zahnheilkunde.*

Herbst's Method of Putting in an Amalgam Filling.—Dr. Bonwill on his recent visit to Europe had a friendly contest with Dr. Herbst, of Bremen, in regard to their methods of making amalgam fillings. Dr. Bonwill condenses amalgam with the utmost care so as to remove any superfluous amount of mercury, hoping to prevent by these means contraction. Herbst does not think that the mercury is of such great importance. He fills the cavity up to about one third with amalgam, burnishes a layer of silver foil in the plug and finishes with amalgam. The next day this filling is polished and some rather soft amalgam is then burnished all over the plug to fill up any small cracks and pits. Fillings according to the above methods were made in glass tubes and the aniline test employed. Bonwill's fillings leaked, Herbst's fillings were solid.—*Deutscher Monatsschrift für Zahnheilkunde.*

Karolit is the Name Given to a Special Prepared Vulcanizable Gutta-Percha.—It is treated and used the same as rubber; the finished plate being light, very elastic, and can be highly polished. It does not absorb liquids from the mouth and will not become porous.—*Die Zahnkunst.*

Tanoform Cement.—A Mixture of bannoform and formaldehyde, has been used with great success in more than 1,000 cases for capping amputated pulps. It is strongly antiseptic, easily applicable, and becomes immediately hard. It is also of good service in pulpitis but it discolors the teeth.—*Dzierzawski, Ref. from D. M. J. Z.*

The Medical Treatment of Toothache.—In a case of severe neuralgia of the lower maxilla, a local application of half a grain of cocain brought permanent relief, although it is not desirable to place the remedy in the patient's hand. The following prescription has proven itself very effective in those persons that have suffered for many sleepless night :

R	Miniae sulf.	-	-	-	grs. ij.
	Acid. hydrobrom	.	-	-	gtt. v.
	Tinct. gelsem.	-	-	-	gtt. xv.
	Syr. simpl.	-	-	-	℥ ss.
	Ag. dist. ad.	-	-	-	℥ j.

The most effective remedy is salicylate of soda, even in those

cases where pain results from "taking cold" and in the beginning of periostitis.

The dose should be 15 grains in combination with about 30 drops of tincture of belladonna, eventually repeated in about four hours.—*Ash & Sons, Vierteljahrs-Bericht.*

ALL SORTS.

Pyorrhoea Alveolaris Treatment.

My treatment in *all* cases of pyorrhoea is the same, and with it I have never failed in effecting a speedy and permanent cure in the most difficult cases. I begin by extracting all the tartar from the necks and fangs of the teeth; wash out thoroughly with warm water all around the teeth. Give the patient a mouth wash, such as a 50 per cent. solution of listerine, or 50 per cent. euthymol. I then prescribe Lithia tablets to be taken three times daily in a tumbler full of water; with instructions to patient to eat rich food, especially avoid fat meats. I urge my patient to be prompt and call every other day, at which time I syringe out around the teeth thoroughly with euthymol. The lithia eliminates the uric acid from the system and renovates the kidneys, accompanied with the wash, the mouth soon heals and becomes once more in a state of health.—R. L. READY, in *Dental Century*.

Death from Cutting a Wisdom Tooth.

M. Heydenreich reported the case of a man, thirty-three years of age, brought to his clinic and said to be suffering from mumps. There was high and persistent fever, rising to 104° F., with agitation, delirium, stiffness of the jaws, and swelling over the right parotid extending into the neck. When M. Heydenreich saw the patient, on the third day of the grave symptoms, the condition seemed to have improved. The temperature was from 102.5° to 100.4°, consciousness had returned, and the swelling was strictly limited to the angle of the right jaw. The patient could open his mouth, and a drop of pus escaped by the jaw. All the teeth were there. It was certainly a case of suppurative otitis of the inferior maxilla, due to the eruption of a wisdom tooth. There was not at this time any indication calling for operative measures. The next day, however, the patient became semiprostrate, and in the evening the

temperature rose to 104.9° F.; on the fifth day he was taken in a moribund condition to the hospital. There was complete left hemiplegia. A free incision was made by means of the thermal cautery as far as the zygoma, but no pus was found. He died next day at midday, the temperature being 98.9° F. The autopsy disclosed pus on the right side between the cranial vault and the meninges up to the level of the convexity, toward the median region, and suppurative otitis of the cranium. On opening the mening. a bed of very thick greenish-yellow pus (showing meningo-encephalitis) was laid bare. There was no lesion in the interior of the brain.—*N. Y. Med. Journal.*

Combination Gold Filling.

One has not to go very far in dental practice until he will meet with a case which I will endeavor to describe. A front tooth, probably a cuspid, with large shallow cavity on labial surface, extending far beneath margin of gum.

This is exceedingly difficult to fill with gold, as even by using clamps it is almost impossible to get rubber dam up far enough and keep it there. The most satisfactory method which I have found in such cases is to fit a 22k. gold band around neck of tooth 1-16 inch wide at back, $\frac{1}{8}$ inch wide or less in front, as the case may require, cement this in position pushing it well up under margin of gum. After cement has hardened, preferably at a later sitting the rubber dam may be applied without any trouble, make undercut in cement underneath the band, and put in a gold filling finishing flush with gold band. When all is burnished and polished, you will need to look very closely to detect the joining of the two kinds of gold.—E. R. RANDALL, *Dominion D. Jour.*

Cases of Bone Caries.

Case 1. Mr. B. A young man, in poor health, anemic. Caries of base of alveolus of left lateral of superior jaw, involving the palatine process, with discharge through the tooth root and fistula over the root on buccal surface, tumor in roof of the mouth as large as half of an English walnut. Opened sac to give vent to accumulated pus, the bone being denuded to quite an extent. Washed the cavity out thoroughly with peroxide of hydrogen, then injected sulphuric acid, 1 part of acid to 10 parts of water, each day for several days. Prescribed 10 drops of muriated tincture of iron three times a day, ordered nutritious diet and out of door

life as much as possible. After the first few days I substituted tincture of myrrh and capsicum diluted to a milky color with water, as an injection, in place of the acid. The case healed rapidly.

Case 2. Mrs. R. Strong and healthy, caries at the base of alveolus of both upper laterals. Small tumor in palatine surface. Injected trichlor-acetic acid 1 to 20 daily for three days. Case healed rapidly.

Case 3. Miss J. Caries of superior maxilla at the base of right upper lateral, bone and apex of tooth root denuded of tissue. No swelling or tumor in mouth. Dissected tissue away, cut out diseased bone and cut off the apex of root of tooth. Packed with dilute sulphuric acid on cotton. Next day removed cotton and stimulated with tincture of iodine. Parts healed rapidly, new granulations being thrown out entirely covering tooth root, soft tissue healing with but a small scar.

In all of these cases I filled the tooth roots immediately so that no septic matter would be thrown down into them, and thus keep up a poisonous irritation.—G. W. CHASE, *Items of Interest*.

Temporary Sets of Teeth.

I take the ground that temporary sets are beneficial, if made so they may be worn with comfort. First, the patient has the use of them for mastication, and this is most important to the individual with weak digestive powers, whether hereditary, or caused by continued overstrain by loss of masticating organs. Secondly, articulation. This is also a very important consideration to persons who sing or speak in public. Thirdly, personal appearance. This is no small consideration to ladies, particularly those whose duties bring them much in contact with the public. Fourthly, as a protection for the gums. Instead of temporary teeth being an irritation to the gums made sore by extraction of the teeth, they protect the gums from injury, from contact with hard substances of food and from the teeth in the opposite jaw, where such exist. Fifthly, temporary sets fill the gaps where any extensive bridging is to be done, but where it may be necessary for any reason to postpone the operation.

HOW THEY MAY BEST BE MADE FOR THE COMFORT AND BENEFIT OF PATIENT.

Where I can do so, in the case of upper sets I prepare to extract the molars and second bicuspid some weeks before I insert the temporary set. The greatest shrinkage takes place during the first few weeks. I leave the front teeth for appearance and use, where they are of any use for mastication. Ladies who occupy public positions object to being left

without any teeth whatever. When the gums, where the molars and second bicuspid have been extracted, are healed and the sharp points absorbed, I extract the remaining teeth and take the impression at the same sitting. Where the teeth have been out for some time I allow rubber to pass up over the gums. Where the teeth have just been extracted I grind the tails of the artificial teeth to fit into the sockets left by the recently extracted teeth. This method anticipates the absorption of the alveolus. I have often seen temporary sets of teeth put in on this principle, fitting as well, after having been worn two or three years, as others which had been worn two or three months, but had been put in on the ordinary principle. This is not always feasible where an anesthetic is administered unless it be gas, which may have to be administered twice or more times. The advantages of inserting temporary sets upon this principle are many. It gives them a very natural appearance, looking as if the teeth had grown out of the sockets. After the outer wall of the alveolus is absorbed the tails of the teeth set closely to the ridge. By this method one may, with considerable accuracy, take the impression and make the plate before extracting the teeth. To do so, cut the teeth off the plaster cast, make sockets sufficient to receive the tails of the artificial teeth. This is particularly appreciated in cases of partial sets, as the teeth can be extracted and artificial set inserted at the same sitting. But supposing for some reason, for instance chloroform be administered, the teeth must all be extracted at the one sitting. I would recommend that the gums be given a few weeks for absorption to take place. Then, as in the other case, I would have the artificial gum pass up over the ridge as far forward as the second bicuspid. The front teeth I would grind to fit the gum. That the tails may fit very closely I shave the cast where the teeth come in contact. The advantages of this method over having a gum of whatever material are various.—R. E. SPARKS, *Dominion Dental Journal*.

Hypercementosis.

At a recent meeting of the N. Y. Institute of Stomatology, Dr. Geo. Maxfield, read a paper on the above subject, and cited a number of interesting cases. We append a report of the essay as it appeared in the *International Dental Journal*.

I have one case with a complete history from the beginning, and there are two other cases with results that will be of interest. The literature on the subject is very limited, and I was very much disappointed when taking up the study to find so little. The best that has ever been written on the subject is by Professor Guilford, of Philadelphia, in the

"American System of Dentistry." There is one point that seems to have been made by all the writers, that hardly any trouble is experienced from hypercementosis except where there is a large deposit of cementum. My experience has been that the trouble comes from the small deposits. Here is a case—the first right inferior molar—in which I am confident I was wholly the cause of the trouble. This patient came to me when I was in college at Philadelphia, and I placed two large gold fillings in each approximal surface of the tooth. I used Dr. Bonwill's mechanical mallet, and probably, as most students do, used a heavy blow. I never had that feature brought to my attention as it was in our State examinations at Boston last month. I noticed a number of the candidates who were using extremely heavy blows with their automatic mallets. In this case trouble commenced about three months after the tooth was filled, I commenced treatment by making external applications to the gums, then removed one of the approximal fillings, and finally destroyed the pulp and removed it. As the pain still continued after three or four months, I extracted the tooth, and there was the hypercementosis on each root. I am very confident that the irritation caused by heavy malleting was the cause of that deposit.

I have here—Card No. 3—a case of a second bicuspid. This man had a great deal of neuralgia, which commenced several months before he came to me. It would come on in paroxysms, last for several hours, and then stop. At such times he could not tell which tooth was troubling, but the pain was on that side of the face. After studying his mouth I removed this tooth and the trouble ceased.

Another case (I pass around casts made before and after the tooth was extracted.) This man came in, having suffered for nine years with severe neuralgia through the front and right side of the face. He wanted the lower incisors removed; it was in the winter, and the cold air caused severe pain in these teeth. After looking over his mouth, I told him I would take a cast of the mouth and study the case. When he came again I removed the first right inferior bicuspid, and there has been no recurrence of the neuralgia.

The lady from whom this cast was made suffered a great deal with neuralgia on the left side of the face, and complained of pain in the ear. At that time I was not able to diagnose the trouble, and did not until a few years ago. One can see that all the trouble must have come from that superior first molar, which had dropped down through loss of its antagonist, and there must have been hypercementosis. The neuralgia and the condition of this superior molar are typical symptoms for the diagnosis of this trouble.

I have here a specimen, an inferior left third molar. This man had

been a sufferer from neuralgia for seven years, and had been treated by physicians without effect. After examining the mouth I determined at once what the trouble was and removed the tooth, and his neuralgia ceased. In this case the tooth, instead of standing upright, tipped forward, pressing against the second molar.

Here is a specimen showing erosion, which is very distinct indeed. Undoubtedly this was the cause of the hypercementosis.

Hypercementosis does not always cause trouble. I have a case here of a tooth that I extracted February 25, in which I could not determine from the pain that there was any hypercementosis. As all the other teeth back of the first bicuspid were decayed down to the gum, I removed this tooth because I had to put in a plate, and I did not want to have it in the way.

I have here a specimen upon which the deposit was evidently caused by excessive function. On the first cast it may be noticed that every tooth except the one I extracted has an antagonist.

Some nine years ago a traveling quack came to Holyoke to extract teeth. He operated on the young man represented by this cast, who was then about seventeen years old. The lower left cuspid projected against the lip, was very hard to extract, and his jaw was injured. About three months after neuralgia set in, and remained constant from that time. Now, taking into account the injury from the extraction and that the tooth had no antagonist, I determined that this tooth had hypercementosis and removed it. The specimen shows the diagnosis was correct.

The tooth that is being passed around on Card No. 3 had an antagonist until a few years ago, when I removed the bicuspid above it. The man had had quite a nervous breakdown in the mean time, and after looking his mouth over, noticing that was the only tooth that did not have an antagonist, I determined that was the tooth which caused the trouble. Extraction showed it was the one. One thing I would like to speak of, and that is diagnosing by the bunch through the gum. I have never yet felt one, and in all the cases of trouble I have had there were not excessive deposits. I cannot describe the pain and one the patient cannot locate. To diagnose the trouble is sometimes intuitive. When the patient describes the pain one seems to realize at once whether it comes from the pulp, for in none of these cases did I find any soreness on tapping the tooth. If a patient complains of pain in the ear, as a rule we can be sure that a tooth causes the pain. In all these cases but the first one the patients complained of earache.

Filling vs. Crown.

We should not use crowns until every possibility of filling is removed. Many bicuspid and molars that are *crowned* could be better preserved and more nearly approximate nature, by preparing the surface for filling. Where there is an occluding weak wall, grind it down from one sixteenth to an eighth of an inch. Where there are no walls, insert pins in canals, allowing ends to extend up into the crown space. Take a guttapercha cap crown, cut away the flat surface and the remaining band can be easily adjusted to the tooth, contoured with warm instruments to meet the demands. Then fill with amalgam, allowing the band to remain in situ for a day or two, when it can be removed and the amalgam polished.

There are many good molars doing excellent service, after this treatment, presenting an entire masticating surface of amalgam. Care must always be taken with amalgam to condense well, and my custom is to use warm instruments in packing.—DR. WEAVER.

Porcelain Inlays.

MR. J. H. REDMAN, in *Jour. Brit. Dental Association*, gave a demonstration of a simple method of inserting porcelain inlays in cases of extensive erosion extending right across the teeth. The floor of the cavity is in the first place flattened, and the edges made nearly parallel and then slightly undercut; this is accomplished with a small three-corner file. The cavity should be slightly wider at end nearest the centre of the mouth. A slip of porcelain is then prepared by either grinding down an inlay rod or piece of mineral tooth in shape like a dovetail; when fitted it is inserted from the side (a small portion of cement having been put into the cavity), cut off to length and ground down, either at once or at a future sitting.

A Method of Crowning Incisors and Bicuspid.

The tooth chosen was a right maxillary lateral, from which a live pulp had just been extracted; the crown being cut off and the canal filled, a half-moon-shaped piece of No. 4 crown gold was then fitted to the lingual side of the root, embracing it half-way round. This was removed and laid upside down on a flat piece of crown gold and soldered over a spirit lamp.

Having cut the collar approximately to the shape of the root, a hole was drilled opposite the pulp canal and a tapering platinum pin forced through; being firmly fixed it was removed with the cap and soldered.

On being returned to the root the diaphragm was burnished to fit accurately and an impression taken. The tooth was fitted to the plaster model in the usual way.

The advantages claimed for this method are :—(1) no shaping of the root is required ; (2) no wounding of the gum ; (3) perfect fit of the collar ; (4) no gold can show at the labial margin ; (5) requires very little time to make.

For a bicuspid the collar should be as deep as the bite will allow and the cap puckered to resemble the lingual cusp. This firms a hollow crown with a porcelain face, and is often quite secure without a pin in the root. —G. THOMSON, in *Jour. Brit. Dental Association*.

Restoration with Porcelain in Fracture of the Teeth.

L. Foster Jack, gives his method in the *International* as follows :

“The use of porcelains is especially called for in fractures occurring in the superior incisor, but they may be useful as far back as the anterior surface of the first molar.

Pre-eminent stands the central incisor, most subject to fracture, either by a blow, a fall, or in ordinary use.

The first step in the operation is to cut the irregular walls formed by the fracture and cavity in a direct line from the cutting edge to the cervix, grinding at the same time both the labial and lingual walls to the same plane, thus making a flat and even surface, with the exception of the cavity in the upper central portion. This is accomplished with a corundum or carborundum disk, one side of which is flat.

The next step is the preparation of the cavity. After the removal of all decay and softened tooth-structure the cavity is extended as far towards the cutting edge of the tooth as is compatible with strength, but is not made deep, care being exercised to avoid the pulp. The edges of the cavity are but slightly undercut. The floor should be nearly flat and convex if encroachment upon the pulp is feared. If the pulp is in danger, it should be protected from pressure, which may be exerted at a subsequent stage of the operation.

The tooth being now prepared, we proceed to the formation of the porcelain counterpart. The cavity in the tooth is lined with platinum foil ; this is carefully removed, filling with porcelain body, and the latter fused in the Downie furnace. After stripping off the platinum, the porcelain body is then placed in the cavity and ground flush with the walls.

An all-porcelain tooth-crown of appropriate color, and corresponding

in form and size as nearly to the natural tooth as possible, is selected. From this we cut with a disk that portion which is desired for substitution. This is ground on the lathe until it is sufficiently diminished in size to correspond to the absent part of the tooth.

The grinding is done principally upon the straight side, and it is not necessary to cut the labial surface if the tooth-crown has been well selected.

The relation of the outer porcelain and inner, or retaining porcelain, is obtained by temporarily fastening the two together with wax and fitting them to the tooth. The wax is then replaced by a thinly mixed layer of the porcelain body and the two parts are fused together in the furnace. The piece is cemented to place, finely fitted, and polished."

A Tube-Dowel Crown.

Of course you have never had a dowel crown of your own work come back on you to have the root treated, but you have doubtless had to chip the porcelain off of a Richmond, or split a Logan crown, and bore out a platinum pin to get access to a root that had been improperly treated by some other dentist, only to find that the apical foramen had been drilled through, thus causing constant distress to the patient. Passing over the many things that cause and cure such roots, how do you guard against subsequent trouble when you find a case of this kind? Does not cotton saturated with your "pet" canal dressing usually stop all trouble? I find cotton and campho-phenique removes all soreness. While other more solid materials than cotton may do the work, they are liable to be pushed through the foramen, and you know what trouble and time it takes before you can get the material out again; but a cotton twist can be drawn out easily. I have treated many teeth in this manner, a large number of them cases that could be reached through a filling, or even through a gold cap, but of late years I have handled teeth that call for a porcelain crown, in the following way:

I can assure you that nothing will give you a better result or a feeling that you have performed a more satisfactory operation for your patient than to use a "hollow pin crown," especially in incisors when the apical foramen has been punctured, or in roots in which you suspect the possibility of future trouble. But the hollow pin seems to be the drawback. Friends have said: "If I could only get a tube I could make the crown easily enough." Well the tube is easily made. Take a piece of gold plate and an old excavator (file the excavator if it is not small enough), then start the gold with your fingers just as though you

wished to double it in the middle. When you have bent it to an angle of forty-five degrees, place it on the excavator, and you can round it with a small hammer very easily. As the two edges come close together, use a flat file on them until they just touch. Use a very small bit of solder in making the joint.

The crown is then made in the usual manner, being careful not to fill the tube in backing up the facing with gold. Cut the tube off flush and finish the gold.

Now comes the point. Before setting or cementing on the crown, roughen the tube on the outside with a file and fill the inside with a plug of cotton. Then put a wisp of cotton in the end of the root. Set the crown in cement in the usual manner, and after the cement has hardened, remove the cotton plug from the tube. Sometimes a little cement squeezes into the root end of the tube. If this has occurred, drill through it and remove the cotton left in the end of the root, through the tube. You now have a well-crowned root, with access to the apical foramen.—W. A. HECKARD, *Ind. Dental Journal*.

Method of Obtaining Accurate Fitting Saddle.

Upon obtaining the impression, with the abutments, caps and posts in position, before pouring the model trace the outlines of the saddle, as you wish it to be when completed, with a fine pointed instrument; take a piece of sheet lead, rolled to thirty-two gauge, and burnish it down on the impression, trimming it to the outline traced: then pour the model, and upon removing it from the impression the sheet lead is removed and the model will be found more accurately deepened than could have been done by scraping by hand; and a saddle fitted to that model will, when finished and placed in the mouth, imbed itself in the gum just the thickness of thirty-two gauge plate and no more. It may occasionally be necessary to do a little burnishing when it is tried in, but in the majority of cases a saddle fitted according to this method will not require any alteration whatever.—J. E. NYMAN, *Review*.

Original Method for Close Bite on Anterior Teeth.

It so happens that often in the very place where we most desire to make use of porcelain crowns, viz., in the region of the anterior teeth, the articulation is such that the edge of the lower incisors strikes just about at the point where the pins in the porcelain facing would be; and if the crown were made in the usual manner there would be but a thin

veneering of porcelain over those pins, which would give way as surely as twice two are four. After considering many methods to avoid this danger the writer finally hit upon the following :

In the construction of the crown as large a post as is possible is used. This is adjusted so that the lower incisor almost touches it in occlusion ; it is then ground down on a bevel ; the facing is ground in place, waxed up, and invested ; the pins are bent down as far as possible and ground flat ; then a piece of fourteen ga. square iridio-platinum wire is rolled down to sixteen ga. and adjusted and soldered on top of the post and pins and the incisor is allowed to strike on that ; the porcelain is afterward baked on about the crown as usual, leaving this piece of iridio-platinum exposed ; this takes the entire brunt of the bite and removes the danger of fracture of the crown at its weakest point.—J. E. NYMAN, *Dental Review*.

Method of Making Platinum Solder.

During the past year we have had brought to our notice the best one thing that has been given to porcelain workers in a number of years, viz., a solder by means of which joints can be jumped when necessary, and the use of which dissipates all danger of unsoldering the parts of the metal structure in the facing of the porcelain compound.

The proper proportion by weight of platinum or gold is obtained for example, if twenty per cent. solder is desired it will be, platinum six grs., gold twenty-four grs. ; thirty per cent., platinum nine grs., gold twenty-one grs., etc. The platinum should be rolled out in a thin ribbon, as thin as possible, and about one-eighth inch in width. The pure gold is melted in a globule and the platinum ribbon fed into it ; after that has been done the mass resulting should be rolled out as thin as possible, cut into ribbons, and remelted as before ; this repetition of the first melting process insures an even distribution of the platinum through the mass ; it is then rolled down to about ga. thirty-four, properly marked and it is ready for use.

A Knapp blowpipe will be necessary for the manufacture and use of the platinum solders, the gas blowpipe being insufficient for anything above ten per cent.—J. E. NYMAN, *Dental Review*.

A Case of Abrasion from Tobacco Chewing.

A full lower denture on left side, but lacking molars on the right ; superior right lateral and central missing—have been out for years. In

masticating the abrasion has worn down until the lower centrals and laterals have reached gums above. To correct this condition, construct a bridge from the right cuspid to the right central with open-faced crowns made of iridium gold. This regulates the distance the bite is to be raised. Having the distance, put thin iridium bands around the teeth to be raised without destroying the enamel, except slightly between the teeth. Use 32 or 33 gauge plate and extend the bands only low enough to secure a good grip on the tooth. Drop the iridium caps in these bands and raise the bite according to the front bridge. Put two of the same kind on the right side, raise the two cuspids with platinized gold; this evens up the lower denture. In the superior mouth, fill out the lateral with open-faced crown and contour the cuspid with platinized gold filling.—*Dental Digest*.

Oil of Cloves in Dentistry.

The antiseptic ability of oil of cloves is comparatively low, but its penetrative power probably exceeds that of any drug we use on the teeth. The use of oil of cloves for clearing sections is well known to microscopists, and there are few, if any, organic tissues into which oil of cloves will not penetrate, and thus its especial usefulness is displayed in large cavities where the pulp is covered only by carious dentine, either sensitive itself or at any rate readily transmitting sensation to the pulp beneath. There the beneficial action of oil of cloves is marked, the cavity being swabbed out with oil of cloves on a pledget of cotton, before putting in the cement. the pulp is made comfortable and rarely gives further trouble. This action is probably due to eugenol, which is the principal constituent of the drug and is a local anæsthetic.—E. R. TAIT, *Pac. Med. Dental Gazette*.

Is there no Remedy for Distorted Countenance Caused by Poorly Constructed Artificial Dentures?

I propose to avoid the disfigurement of an otherwise comely countenance by making models of every adult mouth which comes under my care while the natural teeth are intact, said models to be laid away among the patient's personal effects, and as carefully guarded as a government bond or deed to a piece of property. The model to be properly labeled with whatever memoranda seems pertinent, or what would in any manner aid whoever might in after years be called upon to construct artificial substitutes.

A porcelain tooth the color of the natural teeth should be imbedded in the plaster model, thereby avoiding the possibility of losing the color.

For one to fully appreciate what the above suggestions mean by way of aiding in the construction of artificial teeth, let him when his next patient presents himself for full dentures imagine that to assist him in getting the original size, shape, color and arrangement of teeth the patient brings beside the edentulous jaws in his or her head models prepared years ago when the natural teeth were intact. Here would be a condition of affairs greatly to be desired, viz., that instead of guessing at color you would have it exact; instead of guessing at the size you would have it exact; instead of guessing at the length you could easily approximate that; also any peculiar modification of arrangement could be easily duplicated if desired. For any practitioner to claim that he or she could produce equal results without such aid, as another could with it, would be, I think, to juggle with the truth.—DR. A. M. BAKER in *Pac. Med.-Dental Gaz.*

Bridge-Work, Using the Teeth Previously Lost to Fill the Space.

The inferior central incisors, having become loosened through a neglected pyorrhea and the accumulations of tartar, were extracted, the lower portion of the roots removed, the canals filled with cement and closed with amalgam. They were then placed in position on the bridge which was held in place by bands encircling the lateral incisors and the teeth were held in place by being cemented into bands held by a depressed bar between the laterals. The bridge was worn with comfort for nearly six years, when the laterals were lost from the same cause that had led to the loosening of the centrals.

It is sometimes extremely difficult to supply with artificial teeth the loss of the inferior incisors. In such cases the bridge-work above presented is to be commended. It is durable and presents a natural and pleasing appearance.—W. E. COOK, *Pac. Med. Dental Gazette*.

BRIEFS.

Seamless Crowns Not Strong.—Seamless crowns cannot be as strong as a band crown, because the strain comes across the grain of the metal.—J. H. Beebe in *Cosmos*.

Caries of Bone and Tri-chlor-acetic Acid.—In cases where but little tissue has been affected, tri-chlor-acetic acid will act very happily.—*W. G. Chase, Items of Interest.*

Betanaphthol for Pyorrhea.—We are using an alcoholic solution of betanaphthol from five to twenty per cent. for pyorrhea with good results; about once in three days is often enough to use it.—*Dental Review.*

Rotating Teeth.—In rotating teeth it is well to rotate them just a little beyond the point desired, as they are nearly sure to return in some degree toward their original positions.—*Dr. Messerschmitt, in Cosmos.*

Where Crystal Gold Should not be Used.—There is one place where crystal gold should never be allowed to come to the surface, and that is in cavities occupying the masticating portions of teeth.—*R. Ottolengui, Items.*

Most Permanent Crowns.—Regarding permanency, the crown is the most permanent which furnishes the least irritation to the tissues surrounding the root, and I think that is, without question, the bandless crown.—*H. N. Holmes, Cosmos.*

The Man who Does the Best Dentistry is he who differentiates; who can look at a tooth and tell what material is best adapted to its preservation—whether gold, amalgam or cement; they are all good, but should be used in the right place and at the right time.—*H. H. Johnson, in Items.*

Rubber for Edge of Plaster Bench.—Nail a piece of old cushion tire—procurable at any cycle repairer's for a few pence—along the edge of the plaster bench; this obviates all the irritating noise when casting impressions, filling up flasks, etc., and the vibration from the rubber assists the casting.—*G. J. Wardill, Quarterly Circular.*

Treatment of Hypersensitive Dentine.—A special remedy I have found to be of practical value in most cases is a combination of chloroform, ether and menthol applied with a hot-air syringe. This has seldom failed me even in the most extreme cases to make the operation at least bearable.—*R. G. McLaughlin, Dominion Journal.*

Canada Balsam for Fixing Inlays.—Inlays of porcelain treated with Canada balsam dissolved in benzole are much more durably fixed in position than they are when imbedded in a film of oxyphosphate cement, provided an accurate fit is obtained by grinding a circular rod of porcelain to fit into the cavity.—*W. Booth Pearsall, Quarterly Circular.*

Another Cause of Decay Around Gold of any Preparation is leaving a lining or parts of the cavity lined with decomposed dentin

without a lining of some material to fill the porous dentin, and prevent fluid circulation. Fissures and undercuts caused by overlapping enamel are also causes for ill-effects.—*S. B. Palmer, Ind. Dental Journal.*

To Remove Gum Tissue from a Tooth Cavity.—A difficulty which is frequently met with is the intrusion of the gum into the cervical edge of the cavity, so as to render difficult and very painful the adjustment of the rubber: the excess of gum may be burnt away with a minimum of pain by means of sodium ethylate.—*Robertsham, Dental Record.*

For Hemorrhage after Extraction.—Tincture benzoin 1 ounce, alum 2 ounces, aqua 20 ounces. Mix and boil for six hours in a glazed earthen vessel, adding hot water to compensate for evaporation. Filter and keep in well stoppered bottles. A drop of this fluid poured into a glass containing human blood produces instantaneous magma.—*H. H. Merrell, in Items.*

Gold vs. Amalgam.—Where there is not too much contour required, and all precautions necessary for the best results are taken, as good a filling can be made with a reliable alloy as with gold. Where great strength is required however, and thin walls need protecting, or where color of filling is an object, gold is today without a rival.—*J. N. Crouse, in Dental Digest.*

Fluids of the Mouth and Sensitiveness of the Teeth.—The conditions of the fluids of the mouth exert a direct influence on the sensitiveness of the teeth. One authority states it as an axiom that "no cause is so active as a primary influence in inducing sensitivity as a constant slightly acid state of these fluids," and conversely that a neutral or slightly alkaline state is non-irritating.—*R. G. McLaughlin, Dom. Jour.*

A Satisfactory Heat Test for Teeth.—A very satisfactory means of applying the heat-test is by using mineral talc, or French chalk, similar to that which the tailor uses for marking cloth. A piece of the material is easily cut into a convenient shape for carrying in a port-polisher so as to reach any tooth. It readily absorbs the heat of an alcohol lamp, may be heated hundreds of times, and does not corrode.—*Dr. Brackett, International.*

Pithwood for Polishing Crowns.—"Jewelers' pithwood will be found a useful addition to the dental laboratory. In finishing a gold cap, press your cap in the end of a stick of pithwood. Trim off the surplus around the crown, and you can finish it up without fear of altering the shape of the cap. Run a wire through the stick and it will not break. It is inexpensive, and if once used, you will always have some on hand."—*W. H. Jones, in Items.*

Where Pyrozone is Effective.—A little 25 per cent. solution of pyrozone on some cotton wound on a broach and put up the canal will instantly stop the bleeding from extirpated pulp so you could proceed to dry the canal and fill it at once. When trying to fit a crown to the root of a tooth, and the gums are bleeding and oozing so that you cannot get it dry enough to attach the crown, apply 25 per cent. pyrozone on a lock of cotton.—*L. West, in Items.*

In Treating Cases of Hemorrhage occurring some hours after extraction I always use a combination of tannic acid and plaster. Take two tablespoonsful of the plaster and one teaspoonful of tannic acid, which makes a stiff batter, and then press this down firmly on the gum. The hemorrhage will be stopped in less than two minutes, and in four or five days the plaster will become soft and disappear. I have never failed with a case thus treated.—*E. B. Crane, Digest.*

Treatment of Fungoid Pulp.—Treat them with a strong solution of tincture of iodine and afterward a mixture of carbolic acid. Packing small wedges of cotton, saturated with these solutions, around those pulps very soon reduced them and got rid of the fungoid without producing any marked pain. Afterward we could destroy the pulp in the usual manner, after filling the roots, and making no distinction in this class of teeth.—*B. G. Maercklein, Dental Review*

Fitting and Insertion of Gold-plate "Veneers."—Pure gold of 28 or 30 gauge is used, being burnished into position over the cavity, and allowed to project slightly over the margins. A rim of gold, accurately fitting cavity, is then soldered to the internal surface of the veneer. The rim, being united to the veneer close to its margins, prevents the possibility of its edges springing away from the tooth. A better hold is also secured to the cavity, thereby gaining solidity.—*O. B. Burns, Pac. Med. Dent. Gaz.*

Advice.—Much has been said in regard to artificial teeth, and I think many dentists talk too much about it to patients. I am aware that most of us want to please patients, asking their advice as to how they wish their plates made, kind of teeth they want used, etc. Some may ask the advice, and then do as they think best. But I fear, judging from the appearance of some artificial teeth, that many follow the advice given by the patient as to the selection and the arrangement on the teeth.
J. C. Edington, Cosmos.

Non-Conductor.—Make a stiffish paste by mixing a small quantity of balsamo desarto with equal quantity of oil of cloves, into which rub a sufficiency of oxid of zinc. Apply immediately and spread over all the surface you wish to cover. Then add oxyphosphate cement as

desired. You will then have an antiseptic as well as rigid non-conductor. Greater hardness of this paste may be had by using the balsamo and oxid of zinc alone, and will often be found a very desirable temporary stopping.—*E. L. Hunter, in Dental Weekly.*

The Bruising of Dentin.—When the dentin becomes bruised upon the surface by the pressure of an instrument, or by gold that has become harsh by cohesion, the organic arrangement is broken up, and decomposition is the effect. This has been introduced to show that effects follow causes. Cohesive gold-foil would not bruise dentin, provided it was laid on in smooth layers as a lining. It is the hard pressure upon bits of gold roughened by serrated instruments, or the instrument itself, that injures.—*S. B. Palmer, Ind. Dental Journal.*

Repairing a Gold Crown.—Just suppose you have made a gold crown, and in finishing you go through the shell making an unsightly hole. If you undertake to solder this the chances are that you will have three or four holes caused by the solder melting out at the joints. To prevent this trouble, paint the crown all over the outside with whiting mixed thin except around the hole which you wish to repair, fill this with a plug made from gold foil, touch it up with a drop of borax water, and put a bit of gold solder inside, heat it with blow-pipe and success will be the result.—*E. A. Randall, Dom. Jour.*

Sensitive Dentin.—Dr. C. B. Rohland, of Illinois, says: "By adding just sufficient carbolic crystals to cocain hydrochlorate and rubbing together with a spatula until the cocain is dissolved, a thick syrup is obtained, which is escharotic, antiseptic, obtundent. With this he often obtains most gratifying results in the treatment of sensitive dentin in cavities of decay. It should be used with the rubber-dam, dryness to the verge of desiccation secured, applied warm, and treated in situ with the hot air syringe, as hot as can be borne, and again dried before excavating. If one application fails to give the desired result, two almost invariably will be effective."

To Fold Gold Foil without Touching with the Fingers.—The book of foil is held in the left hand and opened to the first leaf, the right half of the book is slightly raised so that the outer edge of the sheet of foil nearest the right hand will fall, with the help of a little shaking, inward so that the two edges will be approximated at the central fold of the book, which is then closed on the folded gold and pressed into contact with the fingers passed over the outside covers of the book. The same process is repeated until the leaf of foil is folded to the desired number of thicknesses. The strip of folded foil can then be cut into strips the desired width with shears.—*A. G. Weber in Cosmos.*

Care in Adjusting Separators.—Wherever the separator is indicated it should be used in the following way: Care must be exercised in its adjustment not to allow it to impinge on the gum or unnecessarily wound the soft tissues. It should not be tightened to the limit at once, but merely “snugged up” till the patient feels it. Then, as the operation progresses, it can be gradually tightened at intervals without appreciable discomfort. By the time the cavity is prepared, sufficient space will usually have been gained to admit of the insertion and proper contouring of the filling, and then a slightly additional space obtained during this part of the operation will afford opportunity for polishing.—*C. N. Johnson, Cosmos.*

New Forms of Perry Separators.—Dr. G. V. Black has designed and had made by the S. S. White Manufacturing Co. six additional forms of Perry Separators. They are designed to overcome certain difficulties met with in the use of the Perry separator as heretofore found in the market. In the regular set of Perry Separators there is but one size and form for the molars, one for the molar-bicuspid and one for the bicuspid.

Two additional forms have been devised for each of these positions. They are called specials. They are made to catch the tooth nearer the gum margin than those of the regular set, so that they can be used on very long teeth, or upon teeth very much broken down. The other forms designed have extra broad bows, so they can fit over teeth that are extra large or irregular.

The Indiscriminate Use of Crown- and Bridge-Work is to blame for a decline in operative skill. The readiness with which dentists condemn teeth nowadays as unfit to fill but safe for crowns is appalling. Had our predecessors done the same, we would be much nearer to the edentulous race than we are. The ease with which crown-work can be done, if compared to highly skillful operative dentistry, is undoubtedly the main cause of the wholesale butchery, of the wholesale unesthetic dentistry that confronts us in the profession to-day. How much easier is it to cover a first bicuspid with an unsightly gold crown—or even a porcelain one—than to introduce a properly constructed contour filling, well condensed, well knuckled, highly finished? Is it altogether the physical labor that speaks against the laborious task of the tedious filling process, or has the self-advertising gold crown something to do with it? With many it certainly has.—*R. H. Hofheinz, Cosmos.*

Tin at the Cervico-Lingual Margin.—In anterior approximal cavities, the most common point liable to defect is at the junction of the

cervical and lingual margins. The therapeutic action of tin salts is well known. When about to insert our filling, we take a small roll of tinfoil, place one end in the undercut just at this point, allowing the other end to run out over the margin, then fill over with gold, we have at this very weak point a thin and small amount of tin which will oxidize and prove of valuable service.—*J. E. Wilkinson, Dominion Journal.*

The Test of a Dental Origin of a Distant Pain should be, Does the pain disappear promptly upon the correction of the dental disease without any other treatment? The vast majority of localized pains about the head and face are due to diseases of the eyes and teeth. Those of the eyes are most frequently located in the first division of the fifth nerve, and, as stated, those of the teeth in the second and third branches. These rules are open to many exceptions, but serve as directing signs in the location of the causes of facial and cranial pains.—*H. H. Burchard, International.*

To Repair a Broken Pin in a Logan Crown.—An old-time dentist came into my office the other day with a central Logan crown in his hand the pin of which he had broken off, in biting an apple. About an eighth of an inch remained in the crown. We repaired it thus: Drilling a small hole through the pin a piece of wire was passed through, and the two ends twisted together to the length of the original pin; the twist was compressed laterally with a pair of pliers; a little solder was run into the spaces between the wires and between these and the old pin end; and a new pin was thus formed to all intents as strong and having a better hold on the cement than the original. In twisting up the wire, hold the pin with a pair of small-nosed pliers, or you may loosen pin in crown.—*J. H. Hughes, Dental Review.*

Removal of Dental Pulp.—I depend on it mainly where arsenic has been applied, and the pulp deadened enough to remove the bulbous portion, but on attempting to enter the canals with a broach you are greeted with a groan from the patient, followed by looks of vengeance if you persist in your efforts. I have the rubber dam in place, and proceed to dry out the bulbous part of the canal with hot air. After getting it as dry as possible, I prepare a ball of temporary stopping large enough to nicely cover the opening; take a small pellet of cotton, very loosely rolled, dip it in chloroform, place in bulbous portion, heat my temporary stopping, place it over the opening, and immediately press on it with a suitable burnisher or tightly rolled ball of cotton. If the patient gives a slight flinch, you can remove cotton and stopping and work away at those roots as long as you please.—*F. H. Bowman, Dental Review.*

EDITOR'S NOTES.

A Few Words in Closing.

WITH this issue we close Vol. XVIII of the OHIO DENTAL JOURNAL, and we are glad to announce that the past year has been a very prosperous one, the JOURNAL having received more new subscribers than ever before in any one year. Now another year is before us and a new volume begins which promises better than any of its predecessors. Several new features will be introduced and the JOURNAL kept up with the advance of the profession. Aside from much new and original material promised for the coming volume, we shall keep our readers posted on all important thoughts presented to the dental world from all sources. Our aim is to make the JOURNAL indispensable to every member of the profession.

For the assistance and support our readers have given us during the year past, we feel very grateful and hope that what the JOURNAL has given will be of lasting benefit. We hope every reader will feel at liberty to send, at any time, some practical hints, notes of interesting cases in practice, special methods of work or anything of an instructive nature and thus assist us in making the coming volume of inestimable worth to the dental practitioner.

We hope to have all our present readers on our list another year and to welcome hundreds of new subscribers.

As the holidays will have come and gone by the time our next issue appears we will now wish you, one and all, a Merry Christmas and Happy and prosperous New Year.

New Publications.

GOULD'S POCKET MEDICAL DICTIONARY. Philadelphia: P. Blakiston's Son & Co., Pub., 1898. Price, \$1.00.

The new edition of this little book contains 21,000 words,

pronounced and defined in its 565 pages, yet it is scarcely more than half an inch in thickness. It can be carried with ease in any pocket. It is a very popular dictionary and the sales have been very large, not only in America, but throughout foreign countries as well.

Several features of this book call for special mention: The simple and practical system of pronunciation; the large percentage of words specially pronounced; the concise definitions; the omission of rare and obsolete words out of place and useless in a book of this character; the many valuable tables especially that of clinical eponymic terms, a novelty that in itself is worth the one dollar asked for the book; the style in which the book is made, the types, shape, printing and binding, and lastly the very convenient size of the book.

Dental as well as medical students will find this dictionary indispensable.

BOOKS RECEIVED.

ANATOMY AND HISTOLOGY OF THE MOUTH AND TEETH. By I. N. Broomell, D.D.S. P. Blakiston's Son & Co., Pub. Price, cloth, \$4.50.

SOCIETIES.

National School of Dental Technics.

THE next annual meeting of the National School of Dental Technics will be held on the 28th and 29th of December, 1898, beginning promptly at 10 A.M. with the address of President G. V. Black.

The partially made up program is as follows: The Value of a Graded Course of Study and Uniformity among Dental Schools, by G. V. I. Brown. Reports of Syllabi Committees: Operative Technics, by T. E. Weeks; Prosthetic Technics, by N. S. Hoff; Symposium of Teaching Methods, by W. H. Whitslar, C. M. Wright, and H. H. Burchard; Steel Technics, by C. H. Wilson; Teaching Cavity Preparation, by C. N. Johnson; Master of Exhibits, Grant Molyneaux.

Discussion on the Papers will be opened by prominent

teachers. It is hoped that all interested in the newer methods of teaching in dental schools will be present. A profitable time is promised. Exhibits of class work will be interesting. The profession is cordially invited to attend.

Meeting held in the club rooms of the Grand Hotel, Cincinnati, O.

D. M. CATTELL, *Sec. Treas.*,

904 Stewart Bldg., Chicago.

OUR AFTERMATH.

FINED FOR ILLEGAL PRACTICE.—C. O. Brown was fined \$25 and costs for practicing dentistry without a license, at Youngstown.

NEW DENTAL WEEKLY.—No. 1 of a new dental weekly published in connection with *The London Dentist*, in London, Eng., has been received. Subscription price is \$2.00 a year.

OHIO STATE DENTAL SOCIETY.—Be sure and attend the meeting at Columbus, Dec. 6-7-8. Excellent clinics, good essays, good time. Don't miss it. The meeting this year will be at THE SOUTHERN HOTEL.

DEATH OF MRS. F. S. WHITSLAR.—Members of the profession will be grieved to learn of the loss sustained to Dr. F. S. Whitslar, Youngstown, by the death of his estimable wife on Oct. 28. Two sons, Dr. W. H. Whitslar, Cleveland, and Grant Whitslar, Chicago, and one daughter, also mourn her loss.

SUSPENDED PUBLICATIONS.—We regret to learn of the suspension of the two well and favorably known dental journals, *The Dental Weekly*, edited and published by Dr. B. H. Catching, Atlanta, and *The Dental Practitioner and Advertiser*, so ably edited by Dr. W. C. Barrett. The cause of suspension of the first was that Brother Catching was overworked and did not feel that he could keep up the publication. The publishers discontinued *The Practitioner* on account of business changes and new arrangements. We shall greatly miss both of these original, well edited and newsworthy journals.

"INFORMATION." is a new monthly magazine devoted to Oral Hygiene, and general information. It is specially intended to educate patients and people in general regarding the necessity of having their teeth cared for by the dentist, yet there is much in it to interest the dentist himself. The instruction articles for patients are written by men prominent in the dental profession, and every dentist will be benefited by keeping the magazine on his reception room table for waiting patients to peruse. It is edited and published by Dr. L. P. Bethel, Kent, O., price \$1.00 a year.

In subscribing or renewing subscription for THE OHIO DENTAL JOURNAL, send \$2.50 and both "OHIO JOURNAL" and "INFORMATION" will be sent to you for one year.

